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Surveys of Nutrition of Populations*

4. The Vitamin D and Calcium Nutrition of a Rural Population in Middle Tennessee

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THIS report deals with the vitamin D and calcium nutrition of the population whose general character and nutrition in respect to certain other nutritive factors have been described in previous publications.

METHODS

Dietary—The diet intake record in respect to vitamin D and calcium was obtained as previously described.[1] For the calculation of calcium intake the tables of *A Laboratory Handbook for Dietetics*, by Mary Davies (Schwartz) Rose, *The Fundamentals of Nutrition*, by Hawley and Maurer-Mast, the *Farmers' Bulletin, Rabbit Raising*, U. S. Department of Agriculture, and *The Structure and Composition of Foods*, by Winton and Winton were used.[2] For vitamin D the tables used were by Booher, Hartzler, and Hewston, "A Compilation of the Vitamin Values of Foods in Relation to Processing and Other Variants."[3] In each instance the value most clearly applicable in respect to season, variety, preparation, etc., was selected. In the few instances where values were lacking in these tables other sources were used, or, if no satisfactory figures could be found, arbitrary values were assigned on the basis of similarity to other foods or on similar grounds. In no cases did such arbitrary assignment of values modify the results significantly.

History and Physical Examination—A medical history and a physical examination of every subject was obtained as described in a previous report. Unfortunately there are few symptoms and signs of either calcium or vitamin D deficiency except in relatively severe and advanced deficiency states. Also, except in very young children (generally under 3 years), the physical signs

* The studies referred to herein were conducted under the auspices of the International Health Division of the Rockefeller Foundation of New York City by the Nutrition Unit of the Departments of Medicine and Biochemistry of the Vanderbilt University School of Medicine, Nashville, Tenn.

of vitamin D deficiency (rickets) are those of healed rickets, the scars or residual deformity of rickets. In the history particular attention was paid to weakness, head sweating, skeletal deformities, disorders of growth and development which might possibly be attributed to rickets or calcium deficiency, and to a prior diagnosis of rickets, tetany, or osteomalacia. A record of frequent or excessive decay or disturbances in eruption and formation of the teeth in children under 16 was included. The intake of cod liver oil or other forms of vitamin D or calcium supplement was recorded.

Physical examination paid special attention to skeletal deformities, craniotabes, dental development and hygiene, and physical weakness possibly associated with rickets. Rachitic deformities in older children, representing old, inactive rickets, were recorded as a matter of interest concerning previous vitamin D nutrition. They were clearly distinguished from those deformities probably indicating active rickets. Physical signs of calcium deficiency included skeletal deformities, particularly of the thorax and pelvis, seen only in rather severe chronic deficiencies, and Chvostek's sign, Trousseau's sign and similar manifestations of tetany.

Laboratory — Laboratory tests and special procedures included the phosphatase, phosphorus, and calcium concentration in the blood and x-ray photographs of certain bones. The blood phosphatase was determined by the method of Bodansky [4] which includes a determination of the blood phosphorus. Concentration of calcium in the blood serum was determined by the Kramer-Tisdall [5] technic. Determination of the blood calcium was included despite the belief that low values, except for a rare calcium deficiency complicating rickets, would be very few, even if there were calcium deficiency. It seemed desirable to obtain such data for a general population in conjunction with a record of calcium intake.

The x-ray examinations included an anterior-posterior view of the hand, wrist, and lower forearm and a lateral view of the foot, ankle, and lower leg. Most of the examinations were made with the regular hospital apparatus and technics and, because the present report deals with only the usual clinical roentgenologic diagnosis of rickets, osteomalacia and demineralization (osteoporosis), the technic will not be described in detail. A few of the x-ray photographs were made with a mobile apparatus. The photographs were interpreted by one of the professional staff of the Department of Roentgenology.* In addition to the usual clinical interpretation, the density of bone as revealed in the x-ray photograph was measured by a densitometer using a photoelectric cell. This latter investigation however will be made the subject of a separate study and report.

RESULTS

In order to conserve space, tables of the dietary intake of vitamin D have been omitted because the unknown supply from ultra-violet light (sunlight) makes it difficult or impossible to determine the adequacy of the dietary portion. It is worth noting however that only 11 of 72 children 1–3 years of age were recorded as receiving as much as 100 International Units of vitamin D daily in their diets. The intake in the form of a medical supplement given to those subjects with symptoms, physical signs, or laboratory evidence of a deficiency is recorded in the discussion of those cases.

The intake of calcium according to age, sex, and race is shown in Table 1. Sixty-eight per cent of the white and 87

* We are greatly indebted to Dr. Herbert C. Francis, Associate Professor of Radiology for the roentgenographic diagnosis.

TABLE 1

Distribution of Calcium Intake Among Persons in the Survey According to Age, Sex and Race Together With the Number and Percentage of Subjects With Intake Below Recommended Allowances *

Calcium Intake Grams	Age in Years 1–3 M-F †	4–6 M-F	7–9 M-F	10–12 M-F	13–15 M	13–15 F	16–20 M	16–20 F	21+ M	21+ F	Total
					White						
0.10	0	0	0	0	0	0	0	0	0	0	0
0.10–0.19	1	2	3	1	1	2	1	1	1	13	26
0.20–0.29	4	3	4	2	1	2	1	2	7	29	55
0.30–0.39	3	10	9	12	1	1	0	6	13	36	91
0.40–0.49	5	3	7	7	2	6	3	3	29	23	88
0.50–0.59	8	4	3	4	1	3	5	3	17	22	70
0.60–0.69	1	2	4	2	0	0	4	4	21	24	62
0.70–0.79	4	5	3	3	2	2	3	1	19	15	57
0.80–0.89	3	4	4	5	0	0	0	0	16	12	44
0.90–0.99	6	1	8	3	1	1	4	3	15	12	54
1.00+	6	13	21	11	12	2	16	8	81	35	205
Unknown	0	1	0	1	0	0	3	2	9	8	24
Total	41	48	66	51	21	19	40	33	228	229	776
Recommended dietary allowances gm.	1	1	1	1.2	1.4	1.3	1.4	1.0	0.8	0.8	
Number known	41	47	66	50	21	19	37	31	219	221	752
Number with less than recommended allowance	35	34	45	44	14	19	27	23	107	162	510
Percentage with less than recommended allowance	85.4	72.3	68.2	88.0	66.7	100.0	73.0	74.2	48.8	73.0	67.8
					Colored						
0.10	4	0	0	0	0	0	0	0	1	1	6
0.10–0.19	4	6	3	3	1	0	0	2	3	11	33
0.20–0.29	6	5	4	2	1	3	0	3	10	17	51
0.30–0.39	4	2	9	6	1	3	0	3	20	11	59
0.40–0.49	5	6	1	6	0	1	3	2	13	13	50
0.50–0.59	3	2	2	4	1	0	1	3	6	6	28
0.60–0.69	1	1	1	5	4	0	3	4	9	6	34
0.70–0.79	5	1	4	2	0	2	3	1	8	7	33
0.80–0.89	2	1	2	0	1	2	2	2	4	7	23
0.90–0.99	0	0	0	1	1	0	2	1	3	5	13
1.00+	0	0	0	2	4	3	7	2	17	7	42
Unknown	0	0	0	0	1	1	1	1	4	5	13
Total	34	24	26	31	15	15	22	24	98	96	385
Recommended dietary allowances gm.	1	1	1	1.2	1.4	1.3	1.4	1.0	0.8	0.8	
Number known	34	24	26	31	14	14	21	23	94	91	372
Number with less than recommended allowance	34	24	26	31	13	13	21	21	70	72	325
Percentage with less than recommended allowance	100.0	100.0	100.0	100.0	92.8	92.8	100.0	91.3	74.5	79.1	87.4

* Recommended allowances for age and sex of Food and Nutrition Board, National Research Council. Twenty-five children under 1 year of age are omitted.
† M=Male; F=Female

per cent of the colored subjects had deficient intakes according to the recommended allowances of the Food and Nutrition Boards.* The deficiency is even more striking when the individual age and sex groups are examined. Almost none of the colored children were recorded as having an adequate intake, and the deficiency is most frequent in those groups with highest absolute requirements, children 10–12, boys 13–20, and girls 13–15. The group with the fewest deficient intakes is the white men (21+), more than half of whose diets were adequate in calcium accord-

* National Research Council

ing to the standard used. The intakes of those with evidence of vitamin D or calcium deficiency are discussed in detail below.

The values for the blood phosphatase activity and the concentration of calcium in the blood are shown in Tables 2 and 3. Very few abnormal values were found and these are presented in detail in the discussion of the subjects who had clinical or laboratory evidence of vitamin D or calcium deficiency. In this discussion are included the very few abnormal values for blood phosphorus. The table of the results of the latter determination is omitted.

Thirty-five subjects had clinical or laboratory evidence of vitamin D deficiency (rickets). Twelve had clinical symptoms and signs, craniotabes (1), deformities of the chest, head or extremities (8), pot bellies (7), and muscular weakness (1), which were considered to indicate active rickets. Four were infants under 1 year, 4 were 1, and 4 were 2 years old. Five were white and 7 were colored. The x-ray showed active rickets in 3, healed rickets in 2, and was negative in 7. The blood calcium was slightly elevated in 2 (11.3 and 11.5 mg. per 100 ml. serum), and not determined in the rest. The blood phosphorus was normal in 7 and unknown in 5. The blood phosphatase activity was normal in 4 (in one it was 11.55 units), and not determined in 8. In addition to those with a diagnosis of active rickets, 54

TABLE 2

Distribution of Blood Phosphatase Activity Values Among Persons in the Survey According to Age, Sex and Race *

Serum Phosphatase Activity	*Age in Years*										
Bodansky Units per 100 ml.	*1–3 M-F* †	*4–6 M-F*	*7–9 M-F*	*10–12 M-F*	*13–15 M*	*13–15 F*	*16–20 M*	*16–20 F*	*21+ M*	*21+ F*	*Total*
					White						
0– 1.9	0	0	0	0	0	1	2	3	21	54	81
2.0– 2.9	1	0	0	1	0	3	6	16	95	87	209
3.0– 3.9	1	0	2	2	0	3	6	8	46	34	102
4.0– 4.9	0	2	4	3	0	3	11	1	17	16	57
5.0– 5.9	0	3	9	2	2	4	3	0	2	3	28
6.0– 6.9	3	5	13	7	1	1	2	0	2	1	35
7.0– 7.9	2	7	15	8	3	0	1	0	0	1	37
8.0–11.9	7	11	12	21	12	3	1	0	2	3	72
12.0–14.9	0	1	1	0	0	1	0	1	0	0	4
15.0–19.9	0	0	0	0	0	0	0	0	0	0	0
20.0+	0	0	0	0	0	0	0	0	0	0	0
Unknown	27	19	10	7	3	0	8	4	43	30	151
Total	41	48	66	51	21	19	40	33	228	229	776
					Colored						
0– 1.9	0	0	0	0	0	0	1	3	11	28	43
2.0– 2.9	0	0	0	1	0	1	5	12	43	40	102
3.0– 3.9	0	0	0	1	1	1	10	4	26	13	56
4.0– 4.9	0	0	0	0	1	3	3	1	8	3	19
5.0– 5.9	1	1	0	2	2	5	0	0	1	3	15
6.0– 6.9	2	3	1	5	1	3	0	0	1	2	18
7.0– 7.9	2	6	4	7	1	1	1	0	1	2	25
8.0–11.9	8	5	12	14	9	1	0	1	0	2	52
12.0–14.9	1	1	5	1	0	0	0	0	0	0	8
15.0–19.9	2	0	0	0	0	0	0	0	0	0	2
20.0+	0	0	0	0	0	0	0	0	0	0	0
Unknown	18	8	4	0	0	0	2	3	7	3	45
Total	34	24	26	31	15	15	22	24	98	96	385

* Twenty-five children under 1 year of age are omitted.
† M=Male; F=Female.

TABLE 3

Distribution of Blood Serum Calcium Levels Among Persons in the Survey According to Age, Sex and Race *

Serum Calcium Mg. per 100 ml.	Age in Years 1–3 M-F †	4–6 M-F	7–9 M-F	10–12 M-F	13–15 M	13–15 F	16–20 M	16–20 F	21+ M	21+ F	Total
					White						
<8.0	0	0	0	0	0	0	0	0	0	1	1
8.0–8.4	0	0	0	0	0	0	0	0	0	0	0
8.5–8.9	0	0	0	0	1	0	0	0	3	3	7
9.0–9.4	0	1	4	1	1	0	1	1	9	12	30
9.5–9.9	2	4	2	3	0	0	1	1	11	18	42
10.0–10.4	4	5	11	6	3	3	10	5	51	48	146
10.5–10.9	1	4	23	8	5	5	6	5	50	53	160
11.0–11.4	1	3	8	12	2	7	6	8	29	35	111
11.5–11.9	2	2	3	6	2	4	4	3	5	13	44
12.0+	0	0	0	3	1	0	0	4	7	3	18
Unknown	31	29	15	12	6	0	12	6	63	43	217
Total	41	48	66	51	21	19	40	33	228	229	776
					Colored						
<8.0	0	0	0	0	0	0	0	0	1	0	1
8.0–8.4	1	0	0	0	0	0	0	0	0	1	2
8.5–8.9	0	0	0	1	1	0	0	0	0	3	5
9.0–9.4	1	2	0	0	0	1	0	2	5	9	20
9.5–9.9	4	1	1	2	3	1	2	2	11	9	36
10.0–10.4	1	1	6	5	4	7	2	5	15	23	69
10.5–10.9	1	3	5	9	3	1	5	8	29	20	84
11.0–11.4	3	2	6	6	1	2	3	2	11	11	47
11.5–11.9	0	0	1	5	1	1	2	2	5	5	22
12.0+	0	1	1	2	1	1	1	1	1	4	13
Unknown	23	14	6	1	1	1	7	2	20	11	86
Total	34	24	26	31	15	15	22	24	98	96	385

* Twenty-five children under 1 year of age are omitted.
† M=Male; F=Female.

subjects, 36 white and 18 colored, aged 3 to 86, had skeletal deformities or dental abnormalities indicative of old, healed rickets.

Besides those with symptoms and physical signs, 11 subjects had only x-ray evidence of active rachitis. This was classed as severe in 1, moderate in 2, early in 1, mild, healing in 6 and questionable in 1. Two were older children (8 and 9), the others one year old or less. The blood calcium was determined in only the 2 older children and 1 infant. It was slightly elevated in the former (11.9 and 16.3 mg. per 100 ml. serum). The blood phosphorus was 7.3 mg. in the subject with a blood calcium of 11.9 mg., and 7.75 mg. in another. In 5 it was normal and it was not determined in 4. The blood phosphatase was 18.52 in one infant with moderately active rickets by x-ray, normal in 3 others, and not done in 7 (6 infants and 1 child). One of the infants was receiving an adequate supplement of vitamin D, another inadequate amounts. Besides those with x-ray evidence of active rickets 4 subjects showed healed rickets by this method of examination.

Twelve children under 12 years of age, in addition to those with clinical or x-ray signs of rickets, showed a greater phosphatase activity than normal (more than 12 units). Values ranged from 12.05 to 19.10, mostly between 12 and 14 units. Only 2 of these were infants, the others were 5 to 13 years old. Males and females were equally represented and 9 including the 2 infants, were colored. Seven were from 3 families. Blood calcium concentration was slightly elevated (11.3–11.7 mg. per 100 ml. serum) in 4 of

these, normal in 3, and unknown in 5. Blood phosphorus was normal except perhaps in 1 (6.0 mg.). Only 1 subject had received any vitamin D supplement and that only for 6 weeks.

Sixty-one older children and adults had phosphatase values over 6 units. With 2 exceptions these ranged from 6 to 12 units and were proportionately more frequent in the Negroes than the whites. An interesting finding is the decidedly greater number, relatively, of males 13–15 with these higher values compared with females of the same age or compared with the males of older ages.

Only 5 subjects showed symptoms or physical signs compatible with calcium deficiency, 1 a child of 1 year and the others all adults, women 39, 44, 55, and 86, respectively. The infant had a history of recent spasms and a delayed dentition. It was breast fed with supplemental food but received no form of vitamin D. The x-ray showed osteoporosis, blood calcium was not determined, and the blood phosphorus and phosphatase were normal. The colored woman, 44, had had 14 pregnancies, gave a positive Chvostek and a questionable Trousseau's sign, and showed a doubtful osteoporosis on x-ray. Of the other women, one had had 11, one 2, and the other no pregnancies. Two had kyphoscoliosis and all showed osteoporosis on x-ray. The blood chemistry determinations were normal in 3 of the women and not done in the 4th. None were taking any form of vitamin D. Calcium intakes were 0.197, 0.245, 0.555 and 0.811 mg. daily.

In addition to those with clinical symptoms and signs, 57 subjects, 10 colored and 47 white, showed an osteoporosis on the x-ray examination. In none was the osteoporosis severe or of a grade seen in clinical osteomalacia. Of these only 16 were males, including 3 children, and 41 were females with 6 of them children. Of the 13 adult males, 9 were 40 years old or over. Thirty-three of the 35 adult women were 40 years of age or more.

Thirty of the 35 adult women had had 1 to 11 pregnancies each, 18 had had 5 or more. The calcium intake varied from 0.172 to 2.201 gm. daily, with 41 having an intake below 0.8 gm. Two subjects had taken an adequate supplement of vitamin D, one 7 months and one several weeks previously.

Blood calcium was slightly elevated in 9 (11.1–11.6 mg. per 100 ml. of serum), 8.9 mg. in 1, and not determined in 11. All phosphorus values were normal. The phosphatase was abnormal in only 2, 9.71 units in a 56 year old woman with 10 pregnancies and a calcium intake of 0.258 mg., and 8.02 units in a woman of 65 with 7 pregnancies and an intake of calcium of 0.548 mg.

Besides those with signs and symptoms of calcium deficiency or osteoporosis on x-ray examination, 14 subjects had a concentration of calcium in the blood serum of less than 9 mg. per 100 ml. They were about equally divided between white and colored, male and female. Four were children, an infant 2, and 3 boys 12, 13, and 15 years of age. Five of the adults were 50 years old or more. All of the women had been pregnant one or more times and 1 was pregnant when examined. The intake of calcium was below 0.8 gm. in 13. In 11 the blood calcium was between 8.5 and 9.0 mg. and in only 1 was it below 8.0 gm. (6.9). This subject presented no other significant findings. Blood phosphorous was 6.92 in the 2 year old child, normal in the rest. The blood phosphatase was normal in all. Only the 2 year old child had received vitamin D supplement, an adequate dose for 6 weeks.

The relation of dental structure, development, and decay to nutrition is so confused that an analysis of dental de-

fects has been reserved for a separate study. However, it may be noted that preliminary analysis shows no relation between the large amount of dental caries observed (approximately 60 per cent of all subjects) and any of the aspects of vitamin D or calcium nutrition.

DISCUSSION

Based on the number with one or more of the positive signs of vitamin D deficiency (symptoms and physical signs, x-ray changes, and high phosphatase values), the incidence of this deficiency in the total population is very low, about 2 per cent. Such a calculation ignores, however, the fact that it is impossible under the condition of the survey to detect and distinguish slight vitamin D deficiency in adults and that this deficiency is confined in a practical sense to early childhood. Considered as rickets, a characteristic and well defined disease of vitamin D deficiency in childhood, the incidence will again depend on the age limits established. The inclusion of all ages for which the childhood limits of normal phosphatase concentration apply (12 units), means the inclusion of a large number of subjects in an age period beyond that in which active rickets ordinarily occurs. On the more usual basis of ages up to 3 years, rickets was found in 23 of 94 subjects (24 per cent), an incidence similar to that often estimated for such a population. Even 24 per cent may not portray accurately the incidence of *active* rickets. Of the 12 subjects with symptoms and physical signs, only 3 had x-ray evidence of active rickets. Though the x-ray is not infallible it is well known that it is often impossible to determine active from inactive rickets of a mild grade by physical examination alone. Even the x-ray cannot detect the mildest grades of rickets or distinguish minimal activity. Unfortunately, in the present survey the infrequency of the determination of phosphatase activity in the youngest subjects made this test of little help, and its value is poorly determined. Of the 3 subjects with rickets on physical examination and positive x-ray signs, 2 had no phosphatase determination. Phosphatase was normal in the other. In the 2 with physical signs and an x-ray diagnosis of *healed* rickets the phosphatase concentration was normal in one and borderline in the other (11.55 units). Of the 7 with physical signs and a *negative* x-ray, the phosphatase was normal in 1 and not done in 6. In the 11 subjects with x-ray evidence of rickets and no physical signs the phosphatase was determined in only 1. In that one it was abnormally high (18.52). Only 2 children in the age group under discussion had elevated phosphatase as the sole evidence of rickets.

Despite, however, the inability of physical examination or even x-ray to distinguish accurately active from inactive or healed rickets it is probably advisable to include both in a survey involving the age period of greatest susceptibility (up to 3 years) because they would give a fairer picture of the actual incidence of mild rickets in a group in which mild rickets is rapidly "cured."

The subjects over 3 years of age with abnormally high phosphatase activity are of particular interest. Although they have been classed with the vitamin D deficient (rachitic) group, the significance of high values in these older children is not clear and it is possible that they do not indicate such a deficiency. It is possible that they reflect osteomalacia, the manifestation in adults of vitamin D or calcium deficiency, or perhaps more often a combination of both. However, if this is the explanation, in no case were the deficiencies sufficiently severe to cause x-ray evidence of osteomalacia, or a

hypocalcemia. Blood serum calcium values in fact tended to be a little elevated.

Only 7 of the 35 subjects with some evidence of rickets were given any vitamin D supplement. For some of them the dosage was inadequate, and others had begun it only recently, apparently after the appearance of the disease. The practical necessity of giving vitamin D supplements to meet requirements and prevent rickets in early childhood is generally accepted, and the lack of such a supplement would of itself seem strong evidence of a vitamin D deficiency. However, lack of such a supplement was just as frequent in those who had no evidence of rickets. Another factor in the occurrence or non-occurrence of rickets is the rate of growth and the state of nutrition with respect to other factors, an influence which must be taken into account in this study. It is interesting therefore that although a disproportionate number with signs of rickets were Negroes, less than one-third of the total number belonged to the low income group.

Actual calcium deficiency seems to have been very uncommon. Although 76 subjects had some of the changes which might represent such a state, it is very unlikely that more than a few of these actually had a deficiency, in spite of the frequency of deficient calcium intakes as judged by the standards used. Three subjects, the infant with spasms, the 44 year old woman with the positive Chvostek and questionable Trousseau's sign, and the 29 year old man with a blood calcium of 6.9 for which no other cause was apparent, probably had such a deficiency. It is also quite possible that 2 of the 3 women with the spinal deformities can be included and perhaps the 2 women with osteoporosis and an elevated phosphatase. It should be emphasized however that calcium deficiency alone is unlikely.

In the majority of these 76 subjects the only evidence of calcium deficiency was an osteoporosis, detected on x-ray examination. Osteoporosis of a grade exhibited by those subjects is believed to occur in old age and in women at and after the menopause, unrelated to calcium deficiency. Most of our subjects with osteoporosis fall into one of these two groups and, in the absence of stronger evidence to the contrary, one is forced to conclude that few if any of them had an actual calcium deficiency.

Unfortunately for its detection calcium deficiency is not accompanied in man by a hypocalcemia except in severe or very chronic cases. Even the finding of a concentration of calcium slightly below the arbitrary lower level of normal is often without significance, and it is likely that for the majority of the subjects with values below 9 mg. per 100 ml. the finding is of no physiologic significance. Only for the 2 or 3 lowest values may there be an intimation of actual calcium deficiency.

SUMMARY

Certain features of the nutrition of a rural population in middle Tennessee in respect to vitamin D and calcium are presented. These include the individual dietary intake of calcium, the findings of a medical history and physical examination, the concentration of calcium and phosphorus and the level of alkaline phosphatase activity in the blood, and the results of an x-ray of the examination of bones of the wrist and forearm, ankle, and leg.

A high incidence of a deficient intake of calcium, on the basis of recommended allowances of the Food and Nutrition Board, was observed, but clinical or laboratory evidence of calcium deficiency was uncommon. Clinical or laboratory evidence of rickets (including x-ray) was found in about 25 per cent of the subjects under 3

years of age, but in some of these the disease was probably healed. Despite some x-ray evidence of osteoporosis and an elevated phosphatase activity in a few older children and adults, instances of probable deficiency of vitamin D, or combined vitamin D and calcium, were very few among these subjects.

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Memorial to Dr. C. C. Young

A concurrent resolution adopted by the House and Senate of the State of Michigan commends the achievements and honors the late C. C. Young, D.P.H., who for many years was Director of the Bureau of Laboratories of the State Department of Health in Lansing. Included in the memorial is the following resolution:

"That the Michigan Legislature convened in Extraordinary Session . . . on behalf of the people of the State of Michigan, in order that the memory of Dr. C. C. Young shall be forever preserved, hereby designate that the Administration Building of the Michigan Department of Health shall hereafter be known as the 'C. C. Young Public Health Laboratory.'"

The resolution also provides that a suitable plaque be erected in the laboratory.

Early Days of the Public Health Education Section

H. E. KLEINSCHMIDT, M.D., F.A.P.H.A.

American Red Cross, North Atlantic Area, New York, N. Y.

A HALF century of American Public Health Association history unfolded before its Section on Health Education and Publicity was born. The infant arrived not with a silver spoon in its mouth; in fact its early days were precarious ones. Once these were successfully past, the lusty youngster showed vitality and grew rapidly and now numbers 806 members, of whom 137 are Fellows. Its name meanwhile has been changed to the Section on Public Health Education.

The delegate to the Association's Annual Meeting in 1920, who came because he was starved for a bit of nourishment that would help him grow up to his job of health education, would have to shop from section to section to satisfy his hunger. He might even return home still hungry and without having been warmed by the companionship of kindred spirits who were equally famished. There was a growing number of such members of the Association whose chief interest was health education, in the very bosom of the public health family they felt lost. Our hypothetic delegate was free as in a cafeteria, to choose from the programs of the eight sections into which the Association was then divided; but what choice did he have? He was welcome to listen to a paper on "Sanitation in Bakeries," or, if he were not particularly bread-minded, to a paper on "Hookworm in California Gold Mines," in the Industrial Hygiene Section. From there he had the privilege of wandering to the meeting of the Laboratory Section to hear a treatise on "Detection of Manural Pollution in Milk," another on "Standardization of Botulism Antitoxin," and if he was still awake, a paper on "The Helpless Narcotic." The Food and Drug Section offered him a dissertation on "Evaporation of Fruits and Vegetables," and Vital Statistics tried to lure his attendance by offering a paper on "Birth and Death Certificates as Legal Evidence." Surely his pulse quickened when he discovered that in the Child Hygiene Section he would hear about "Mothercraft Instruction for School Girls." He might gather some crumbs there, and he wrote on his cuff (the detachable kind) the time and place for the meeting of the Industrial Hygiene Section where he was promised a paper on "Health Education in Industry."

Among these scattered but fairly numerous forgotten men and women who were stirring restlessly there was one catalyst, Evart G. Routzahn, who today is held in endearing memory by the Section as its father. Routzahn found a responsive champion in Dr. William F. Snow, who in turn interested Dr. Lee K. Frankel, Past President of the Association, in the project of organizing a health education group. Routzahn had many friends and a persuasive personality and soon there was a well-voiced demand for recognition of those who needed help in health education practice. At the jubilee meeting of the Association, cele-

brating its fiftieth anniversary and held in New York, November 14–18, 1921, there appeared for the first time a special section program devoted entirely to health education. Permission to form a provisional section had been granted by the Governing Council, and the program was held under the Section's auspices. The purpose of the session was described in the printed program in these words:

> This session aims to bring together the public health workers who are interested in popular health education and publicity. The aim will be to take some first steps toward frankly facing the practical problems which need to be solved in order to secure the results desired from the millions of pieces of printed matter that are being distributed, the great number of addresses, and the increasing use of a growing variety of educational material.

That first session verified the belief and contention that potential interest existed; it was well attended and the discussion was lively. The Symposium on Motion Pictures was conducted by Mr. Routzahn as chairman, and six persons participated. The second session was devoted to a symposium on How To Further Progress in Health Education and Publicity, led by Dr. Snow, and again there were several energetic participants. The spontaneity of these meetings contrasted favorably with the usual formality of other Section meetings and this at once attracted the younger members of the Association who felt no particular allegiance to a given Section and, perhaps, caused some lifting of eyebrows of older members. At the ensuing meeting of the Governing Council held a month later, an influential member reported favorably on the Section, stated that it had attracted 175 persons, and recommended that the Section be continued on probation, so to speak, for another year.

The following year, 1922, the Association met in Cleveland. Dr. Lee K. Frankel was chairman and B. R. Rickards, secretary of the trying-to-be-born section. Again progressiveness was reflected in the unique program. It was something of an innovation to invite non-members of the Association, men not identified with public health, to take a leading part in the program, but that is what the Section did. William Feathers and William Henry Baker, both eminent in the fields of typography and publicity, conducted at the first session what was called a "Clinic on Printed Matter." Samples of health publications had been selected for review, analysis, and criticism. Copies had been supplied to the audience and the two experts analyzed one after another of the pamphlets from the standpoints of copy, form, and typography. That was a lively and instructive session and stirred much comment which led to the improvement of printed matter (and how sorely that was needed!), for the authoritative words of men who were in no way connected with public health and who could view the products objectively, carried weight. So successful was this technic that "clinics" continued to be the popular type of program for the Section for years after; and they have not yet lost their attraction-power and interest. The second session was devoted to a symposium on newspaper publicity. Once more permission to conduct a session on health education the next year was granted.

At the Boston meeting, held in 1923, there was another Clinic on Printed Matter, under the chairmanship of Evart G. Routzahn and the leadership of Phillip S. Platt, and there was also a luncheon session at which Motion Picture Programs and Problems were discussed. As usual, the attendance was good, so good that those standing in the doorway attracted others who were curious to learn what the excitement was about, and thus spread the

fame of the Section. The big news event however, was that the Section had been accepted in full status—at last the lusty urchin was weaned and legitimatized! That year the Fellowship plan was introduced and only Fellows were eligible to hold office—which put a strain on the Section for, while its membership had grown somewhat, only a few were Fellows. We did, however, manage to assemble a slate, and duly elected H. E. Kleinschmidt, Chairman, B. R. Rickards, Vice Chairman, and Marjorie Delavan, Secretary. With high hopes we cheered ourselves and looked forward to the next meeting.

Though now properly recognized and with representation on the Governing Council, the Section realized full well that only struggle would keep it alive. Before leaving the Boston meeting the half dozen of us who were carrying the responsibility resolved that we would employ the shining hours until the next meeting by building up the membership, by trying to serve the members, and by planning our next meeting long in advance. The officers were widely scattered—Albany, N. Y., Lansing, Mich., and Toledo, Ohio; but the mail served us well and in our travels we did manage one or two visits. Meanwhile, Routzahn in New York saw to it that readers of the *American Journal of Public Health* were not neglected, and from his office, bits of colored paper with cryptic messages, passing thoughts, helpful hints, fluttered to our several desks. Sir William Osler always kept a package of post cards handy on which he jotted brief notes to his friends on the spur of the moment—and what a rich source of information these cards were later when they were collected by his biographer! Routzahn used memorandum pads of various hues and a typewriter that seemed to have no punctuation marks. What would you make of a pink slip coming in the morning mail like this:

HEK
Smith wants help on movies
Bananas are being advertised as health food—true?
Send Jones ideas on newspaper leads
EGR

Routzahn's telegraphic confetti was the subject of good-natured banter, which he enjoyed; but that his memoranda commanded attention and stimulated us to act was self evident.

At the Association's meeting held in October, 1924, at Detroit, the Section, like a small boy at a family party, really made its existence known. Besides its two sessions it joined with the Vital Statistics Section in a third meeting, and sponsored two luncheon meetings and a dinner.

For the third time a clinic on printed matter was conducted, testifying to the popularity of this type of program. But the session that was long remembered by the many who crowded into the room was one on Newspaper Publicity. This time, two outsiders, E. G. Burrows, of the Department of Journalism of the University of Michigan, and Lee A. White of the *Detroit News*, and one speaker long identified with health education, Philip P. Jacobs, led the symposium. A note printed in the program stated: "The audience will be supplied with newspaper articles discussed by the speakers." When this session was planned we wondered how to furnish the audience with clinical material, which is a necessary part of the clinic technic. Like medical students who crane their necks vainly to see what the surgeon is doing, our audience would not be able to follow the clinicians as they analyzed the subjects before them unless they had copies at hand. Furthermore, one value of the printed matter clinic was that the audience accumulated samples of good and poor pamphlets, with the clinician's comments, and carried them home for

guidance in their future printing plans. How could clinical material consisting of newspaper articles be furnished? The difficulty was solved with the help of Mr. White. He promised that if we would collect clippings of the articles we wished to have examined, he would have them reprinted in standard newspaper form by his newspaper, *The Detroit News*. To Marjorie Delavan goes the credit for having assembled from all parts of the country a fine assortment of short news articles on health which had actually been printed, and these were arranged on a newspaper page under the masthead of the *News*. A plentiful supply was printed. The evening before the session, a few daredevil members of the Section peddled these sheets in newsboy fashion among the delegates, in the hotel lobby and at the entrance to the ball room where guests congregated for the Association's annual dinner. It was not a very dignified performance but our customers were amused and even some venerable Fathers in Israel smiled tolerantly at the adolescent antics of this new Section—well, they were the "publicity boys," and why shouldn't they practise their trade even at a serious conclave.

Next day our assembly room was crowded with eager listeners and with a liberal sprinking of old-timers from other sections who came to see the fun. All three speakers did a superb job; once again the Section had proved its reason for being—it was established and feeling its oats. A few more Fellows had cast their lot with the new Section and there was little difficulty in finding able candidates for office.

Like other Sections, ours was given the privilege of occupying a department in the monthly *Journal*. Routzahn was appointed editor, and filled the columns with short items collected from everywhere—a new set of posters put out by the Blank Health Department, a novel stereopticon device, quotations from a telling speech, source material on this subject and that. It meant, undoubtedly, that he spent much of his time collecting and classifying such material and writing many letters. His zeal in keeping in touch with health education activities all over the country was amazing.

Today Health Education Headquarters has become an established institution at the Association's Annual Meeting. There the novices and the veterans congregate, and there they find an abundance of material, all neatly indexed and displayed, with attendants in charge always willing to assist the searcher for ideas. Posters, booklets, exhibit devices, catalogues—a complete department store of health education materials and methods. This too was Routzahn's creation. And always, Mary Swain Routzahn was so closely associated with Evart that it became customary to speak of "The Routzahns."

* * *

At the Ninth Institute on Public Health Education, held in October, 1942, and attended by 322 health workers, Professor C.-E. A. Winslow said: "The Health Education Institute is a most remarkable institution and it is a great pleasure to watch its progress from year to year. . . . It is fascinating to see its scope widen and deepen."

That the Institute has won the respect of public health leaders is a tribute to the Public Health Education Section which created and nurtured it at a time when the Section was still weak. More than one public health veteran has expressed astonishment when, engrossed in other affairs, he accidentally discovered for the first time perhaps, the vigor and exuberance of this offspring of the Section. The records of its origin are scanty, and I am indebted to several friends who have aided my memory in reconstructing this sketch.

When the Health Education Section was groping its way in the late 20's, some of the Fellows of that Section felt that it was not enough merely to plan an annual program but that it should develop some means of helping the members to become better craftsmen in the art of health education. One suggestion made by Dr. Iago Galdston was that a definite course of instruction be provided in which the philosophy, art, and technic of health education would be taught. At the time there were few opportunities for a student to acquire such instruction in universities or schools of public health, and the worker already engaged who felt the need of a practical postgraduate course had simply nowhere to turn.

Galdston pointed out that from the membership of the Association itself, could be drawn specialists in a variety of skills such as no university could provide; and that an Institute would bring the school to the student without obligating him to sacrifice much time from his work. It was thought also that an Institute would help the Section to define more clearly its objectives and functions, for health education was a sprawling terrain with indefinite borders and unexplored areas. Finally, an Institute held in connection with the Annual Meeting of the Association, would be a means of reaching many health workers who seldom had opportunity to confer with more experienced colleagues. Since the Association's meeting was held each year in a different locality and attracted many attendants from nearby, each Institute would bring a short course to those who did not commonly enjoy the privilege of travel. It was not the purpose to duplicate the Section program, though it was difficult for some to see how that could be entirely avoided.

Galdston's suggestion was considered by the Council of the Section but no immediate action was taken. He persisted however, and after some four years the Council appointed a committee to evolve a plan. This committee, consisting of Iago Galdston, Evart G. Routzahn, and H. E. Kleinschmidt, met early in 1932 and several times thereafter. It soon developed that the purpose of the Institute was not entirely clear even yet, for there was at first difference of opinion as to whether the course should be an authoritarian one in which the leaders would expound known facts and tested procedures, or a discussion outline for the exchange of ideas on new and not yet established methods, and on more or less technical questions. The former would be in the nature of an academic course, somewhat elementary and led by recognized leaders; the latter, more nearly of a research character, would be exploratory, discussive, critical, and of value primarily to those who had already attained a degree of mastery by reason of experience. To say that one method was of the "academy," and the other of the "university" type would be over-simplification, but at any rate, there was something favorable to be said for both.

Health education was attracting many new practitioners into its ranks and many of them were without much experience. To assist them in acquiring skill was a worthy enterprise. On the other hand, a considerable number of workers had already mastered the elements of health education and felt the need of group exploration; and that too would be of value to all, presumably, for new areas would thereby be discovered which would be for the common good. In the end, it was agreed that as a guiding policy it would be better to plan the Institute for those who wished elementary training.

Important as it seemed to the planning committee to establish a definite policy, the difficulty of actually living within it in practice became apparent

when the program was formulated and the sessions were held. As a matter of fact, the Institute partook of both methods, didactic and exploratory. In the announcement it was stated that:

> The purpose of the Institute is to provide instruction in the content and methodology of Health Education to a limited number of persons actively engaged in Health Education. The students whom it is desired to attract to the Institute may or may not have had training in Health Education in one or the other of the few institutions where it is available. They may have had a little or considerable experience. They may devote all their time to this work or it may be merely one of several activities. In any event, Health Education is for them a major preoccupation and they must from time to time formulate programs of activities in Health Education and carry them through.

The first Institute was launched with fine enthusiasm and some misgiving. (By the way, the circular which announced the new venture was one of the handsomest pieces of printed matter ever issued by the Association.) The attitude of the Association was none too encouraging for, while authority to hold the Institute was duly granted, no great enthusiasm was manifested by the Association's governing body. However, the President of the Association in 1932, Dr. Louis I. Dublin, was energetic in his support and earnestly urged attendance, and the staff of the Association was more than helpful. A fee of $5 and registration in advance were required of all students and this, it was feared, might be a deterrent. When the meeting opened, however, great numbers of unannounced students presented themselves in addition to those who had registered, and the quarters provided for the meeting proved entirely too small.

The staff of the Institute consisted of the following persons:

Iago Galdston, M.D., *Director*
Bertrand Brown
Evart G. Routzahn
Mary Swain Routzahn
Clair E. Turner, Dr.P.H.
W. W. Peter, M.D.
Ira V. Hiscock
H. E. Kleinschmidt, M.D.
George C. Ruhland, M.D.
W. W. Bauer, M.D.
Raymond S. Patterson, Ph.D.

This staff made careful preparations and planned to avoid duplication as much as possible. What the staff set out to do is evidenced by the program:

FIRST SESSION

Discussion of the instruments employed in Health Education; pamphlets, weekly and monthly publications and bulletins, charts, posters, health talks and radio talks; their special utility and their limitations.

SECOND SESSION

The responsibility of the health educator for the authenticity of his material. How to go about securing dependable information to present on the items selected, to the indicated audiences, and through the preferred media. Tapping authoritative sources. The coöperation of the medical profession.

THIRD SESSION

How to formulate a program of Health Education suitable to the community. How to determine the allocation of staff, money, and effort. This problem will be considered from the viewpoint of both the official agency, that is, the department of health, and of the voluntary agencies.

FOURTH SESSION

The avenues through which the program might be formulated; the population at large, special groups, schools, primary and secondary, teacher training organizations, work shops and work places, commercial organizations, etc.

It was a stimulating meeting, though not without its faults. Very soon after assembly it became apparent that the experience levels of the members of the group were of wide divergence, and this made it impossible to keep the discussion always on a common level. For each session there were a chairman, a discussion leader, and a discusser. Interruptions from the floor were invited, which privilege was freely utilized, and therefore it became impos-

sible to control the direction of the discussion. My recollection is that there was considerable wandering from the topic. But not once during those three tightly packed days did interest flag, and it was generally felt that the Institute had vividly demonstrated its need and value. After that trial experience there was no further question about repeating the effort. In succeeding Institutes the student group was divided into sections, each dealing with a different topic. At the final general session reporters summarized the proceedings of each section, so that all might share at least the more important highlights. In subsequent years, new problems have arisen, the charted course has been altered from time to time and new leaders have come to the fore—but that is another story.

* * *

From the *American Journal of Public Health,* June 1939:

"Members of the Public Health Education Section of the American Public Health Association deeply mourn the loss of their leader and friend, Evart G. Routzahn. It is almost impossible for us to think of the Section without him, for it was his personality that gave it zest and color. At a time when only a scattered few were giving serious thought to health education as a specialty of public health E G R saw the advantage of banding such workers together. He nursed the foundling section, laid on the doorstep of the American Public Health Association, until it was accepted as a lusty member of the public health family. All through the years he guided its stumbling gait and, happily, he enjoyed the satisfaction of seeing his child grow sturdy and respected.

"Though E G R never sought honor nor office, both were thrust upon him and he carried them well. For the sheer love of the cause he labored for its well-being. Each month his cryptic paragraphs in the *Journal* stimulated us; many of us turned first to his pages. Annually his exhibit was the rallying place of all loyal members of the Section, and many a youngster and veteran in the field of health education found treasure there. To E G R we turned often and never in vain. With the advice he gave there was always a glint of humor, with his service always a beaming smile. His criticism, eagerly sought, was always penetrating, but never with a sting. Mostly we loved him for his friendliness—for his bubbling good will.

"We thank God that the bench mark E G R is indelibly impressed upon the Public Health Education Section. Time, which mellows sorrow, will never efface that bench mark. We who worked, and planned, and laughed with him have been enriched by the comradeship, and that wealth grows more precious with his passing."

Rheumatic Fever in Cincinnati in Relation to Rentals, Crowding, Density of Population, and Negroes

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RHEUMATIC heart disease is now the first cause of death among children aged 10 to 14, and is second only to tuberculosis at ages 15 to 25.[1] Despite the importance of this disease its cause is not known and its epidemiology is not completely established. Epidemiological thought in the past has been influenced by the early English report[2] that rheumatic fever was an affliction of the artisan class, and not of the impoverished. However, all authorities do not agree with this view, and Glover[3] expresses his opinion as follows: "The incidence of acute rheumatism increases directly with poverty, malnutrition, overcrowding, and bad housing." The association of these conditions with rheumatic infections has been examined critically in only a few surveys covering an entire community, namely those in England,[2,4,5] Dublin, Ireland,[6] Australia,[7,8] New Haven,[9] and Philadelphia.[10] The epidemiology of rheumatic infections, including the epidemiology of acute hemolytic streptococcal infections, has been well summarized by Paul.[11]

METHOD OF SURVEY

The authors have recently completed an examination of all hospital admissions with rheumatic conditions, at all ages, in Cincinnati for the 11 year period 1930–1940.[12] There were 3,475 admissions and 2,178 cases studied in the survey (Table 1).* Among these 2,178 cases there were 583 persons with a listing of rheumatic fever with or without rheumatic heart disease or chorea. Among these, home addresses in Cincinnati were available for 517. The home addresses used were given at the time of the first hospital admission during the period under study. These 517 patients had acute rheumatic infections, most of them with joint symptoms. All of them were not necessarily initial infections. It was believed that these acute cases would provide the most significant epidemiological data. All persons who had rheumatic heart disease without rheumatic fever, and all persons with uncomplicated chorea were omitted from the socio-economic analysis reported at this time.

Through the courtesy of Dr. Floyd P. Allen, Director of the Research

* The material for this paper was collected when the authors were associated with the Department of Bacteriology, University of Cincinnati College of Medicine, The Max Stern Heart Station for Rheumatic Heart Disease, and Children's Hospital, Cincinnati, Ohio.

* It should be noted that a distinction has been made between persons, cases, and admissions. One case represents one hospital's records on one person, although that case may include one, two, or more admissions.

TABLE 1

Cases of Rheumatic Infections Admitted to Cincinnati Hospitals from January 1, 1930, to December 31, 1940

	Number		Cases Utilized * in this Socio-Economic Analysis
All rheumatic heart disease	1,770		
Rheumatic heart disease with rheumatic fever and subacute bacterial endocarditis		9	9
Rheumatic heart disease with subacute bacterial endocarditis		51	
Rheumatic heart disease with rheumatic fever and chorea		8	8
Rheumatic heart disease with rheumatic fever		312	312
Rheumatic heart disease with chorea		52	
Rheumatic heart disease, uncomplicated		1,338	
Rheumatic fever without rheumatic heart disease	254		
Rheumatic fever with chorea		7	7
Rheumatic fever, uncomplicated		247	247
Chorea, uncomplicated	154	154	
Total	2,178	2,178	583

* in so far as addresses were available (517 of the cases)

Division, Cincinnati Public Health Federation, the authors were able to locate each home address in its proper census tract in the city. Dr. Allen has also kindly supplied the following information for each census tract:

1. Median monthly rental, 1940.
2. Per cent of occupied dwellings with 1.51 or more persons per room, 1939–1940. (This served as an index of crowding.)
3. Per cent of dwellings occupied by persons of a race other than white, 1939–1940. (Essentially an index of Negro population.)
4. Persons per net habitable acre, 1940. (This was taken as an index of density of population.)

There is a difference between *crowding*, or persons per room, and *density of population*, or persons per acre. The former is more important epidemiologically. The latter may simply be the result of many apartment houses or private homes close together.

DISTRIBUTION OF RHEUMATIC FEVER BY CENSUS TRACTS

A graphic presentation of the distribution of rheumatic fever in Cincinnati is given in Figure 1. A few words of explanation are necessary in this connection. There are 107 census tracts. Four of these were omitted for reasons as follows:

1. C. T. 32 includes an Orphans' Home and the Cincinnati General Hospital. Four of the 5 cases occurred among the inmates or professional staff of these two institutions, and the home addresses were therefore considered inadmissable.
2. C. T. 59 had only one case in 11 years, but the sparse population caused the annual incidence to appear to be more than 10 cases per 100,000.
3. C. T. 85 had only 3 cases in the 11 year period, also in an area of sparse population, so its incidence likewise appeared to be more than 10 per 100,000.
4. C. T. 24 had a median rental of $16, 17 per cent crowding, 57 persons per habitable acre, and 11 per cent Negroes, but an annual incidence of only 3 cases of rheumatic fever per 100,000 population. This tract is located entirely on a steep hillside (Sycamore Hill to Vine Street). It was omitted because the authors believed that the inhabitants were a selected population. No one would willingly move into or remain in the area unless in good health and able to endure the daily hill climbing. These 4 regions are indicated in Figure 1 by the number of the tract plus a question mark. The minor effect which the omission or inclusion of these 4 tracts had on the statistical significance of the data is described later.

Four other census tracts presented unusual features but were nevertheless

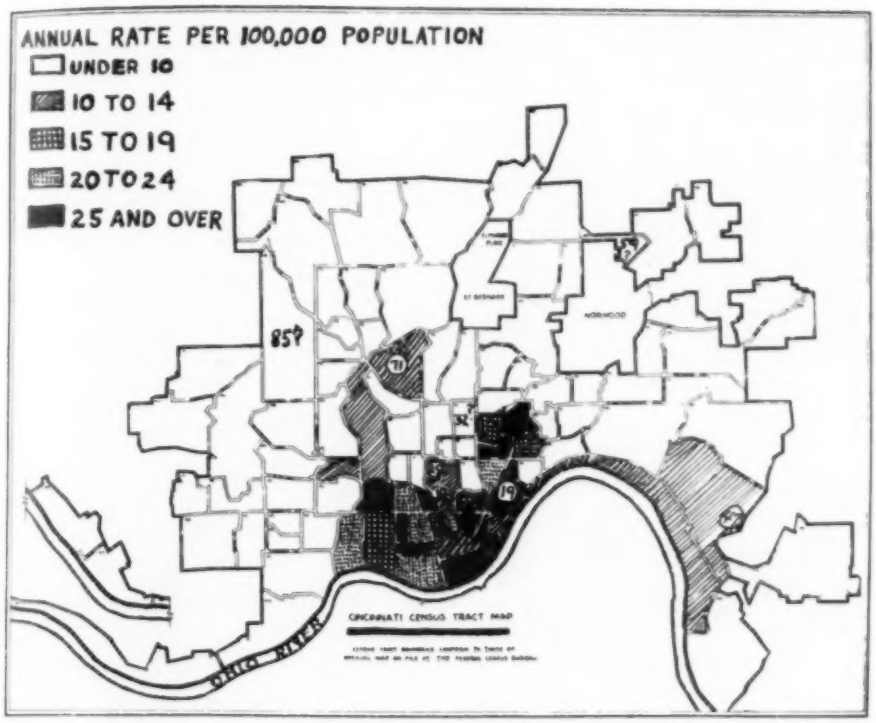

FIGURE 1—Distribution by city census tracts of 517 cases of rheumatic fever admitted to Cincinnati hospitals during 1930–1940, based on the mean annual number of cases per 100,000 population. Population based on an average of the U. S. Census of 1930 and Census of 1940. (See text regarding Census Tracts 19, 25, 47, 71 and 24, 32, 59, 85.)

included. All had an annual incidence of more than 10, but the median rentals were over $21.65, and there was no crowding and there were no Negroes. Census tracts 19 and 47 were not economically uniform and contained homes of both the poor and well-to-do. C. T. 25 was rather uniformly an area of lower middle class homes, and C. T. 71 an area of expensive homes, but one less case in each tract would have reduced the annual incidence of rheumatic fever to less than 10 per 100,000 population.

TOPOGRAPHY OF THE CITY IN RELATION TO RHEUMATIC FEVER

Most of the patients resided in four sections of the city (Figure 1):

1. The "basin area," which is between the river front and the hills rising about a mile northward. This includes most of the slums and all of the central business district.
2. The Mill Creek Valley industrial area which runs northward in a finger-like process on the western side of the city.
3. C. T. 43 and 44 which extend eastward along the river below Columbia Parkway. This parkway is a broad concrete highway along the river above which are bluffs where part of the better residential district is located.
4. C. T. 34, 35, 36, and 37 in the Lincoln Heights District adjoining the basin area on the northeast.

The last group of tracts is easily identified in Figure 2 as comprising those marked by either cross-hatching or diagonally-slanted lines. This is not

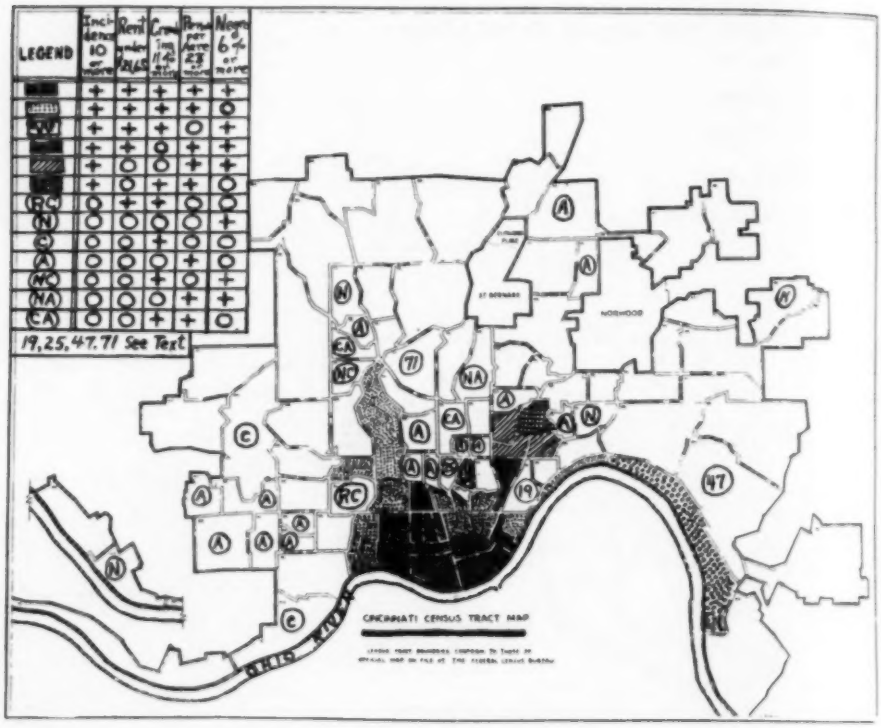

FIGURE 2—Annual incidence of hospitalized rheumatic fever per 100,000 population in each census tract, in relation to rentals, crowding, density of population, and Negro population. Letters in circles indicate characteristics of tracts so designated; thus, RC means rents low and crowded, N means high proportion of Negroes, etc.

a slum area but has a large Negro population, respectively 18, 7, 97, and 46 per cent. Furthermore, it is not a low lying or damp section but is in an elevated part of the city. This would seem to eliminate dampness and proximity to water courses as a possible major factor of importance.

SOCIO-ECONOMIC DISTRIBUTION OF RHEUMATIC FEVER

The relation of rentals, crowding within the home, density of population per acre, and Negro population to the incidence of rheumatic fever by census tracts is portrayed in Figure 2. There are some striking correlations. All 11 tracts (marked in solid black) which had low rents, crowding, dense population, and Negroes, also had a significant level (10 or more annual cases) of rheumatic fever. All 12 tracts (stippled) which had low rents, crowding, dense population, but no Negroes (less than 6 per cent), also had a significant level of rheumatic fever. We might therefore say that the Negro was no factor, if it were not for the 4 tracts which had only dense population and Negroes. These are indicated by diagonal lines (3 tracts), or "NA" (1 tract). Three of these tracts had a significant incidence of rheumatic fever. This is consistent with the picture of rheumatic infections in Cincinnati as reported in previous papers.[12, 13] The Negro had a higher incidence and a more severe form of this disease than

TABLE 2

Distribution by Census Tracts of 517 Cases of Rheumatic Fever Admitted to Cincinnati Hospitals During 1930–1940, in Relation to Rentals, Crowding, Density of Population, and Negro Population*

Characteristics of Census Tracts	Annual Cases Rheumatic Fever per 100,000 Population in Each Census Tract: 10 Cases or More (C. T.)	Annual Cases Rheumatic Fever per 100,000 Population in Each Census Tract: Less than 10 Cases (C. T.)	$(N=1)$ X^2
1. Rental less than $21.65 monthly	25	1	
Rental $21.65 or more	8	69	61.8
2. Crowding 11 per cent or more	25	6	
Crowding less than 11 per cent	8	64	45.0
3. Persons per acre 23 or more	30	19	
Persons per acre less than 23	3	51	34.1
4. Negroes 6 per cent or more	16	6	
Negroes less than 6 per cent	17	64	19.0
5. Negroes 15 per cent or more	12	2	
Negroes less than 15 per cent	21	68	18.7
Rental less than $21.65			
Crowding 11 per cent or more	24	1	
(Omit Persons per acre and Negroes)			58.9
6. Rental $21.65 or more			
Crowding less than 11 per cent	7	64	
(Omit Persons per acre and Negroes)			
Census Tracts not assignable above	(2)	(5)	
Crowding 11 per cent or more			
Persons per acre 23 or more	24	2	54.5
(Omit Rentals and Negroes)			
7. Crowding less than 11 per cent			
Persons per acre less than 23	2	47	
(Omit Rentals and Negroes)			
Census Tracts not assignable above	(7)	(21)	

* 103 Census tracts after omission of C. T. 24, 32, 59, 85 (see text).

the white. Whether this is the result of racial susceptibility or of a different pattern of living cannot be determined exactly.

Table 2 summarizes the statistical relationship between the annual incidence of rheumatic fever and rentals, etc. The selection of (1) $21.65 rental, (2) 11 per cent crowding, (3) 23 persons per acre, and (4) 6 per cent Negroes, was made after a trial and error method had determined that these limits gave the best correlation with the presence or absence of a significant amount of rheumatic fever. Such selection is necessary because the rental value of any one type of housing will vary in different cities and nations. Likewise the level at which crowding, density of population, or Negro population becomes important will vary somewhat in different cities depending upon other factors such as climate and living habits. The limit of 10 annual cases of rheumatic fever per 100,000 population was also used by Hedley.[10]

It is evident that the order of importance is: (1) rentals, (2) crowding, (3) density of population, and (4) Negroes. For instance, there were 77 census tracts each of whose median monthly rental was over $21.65. Only 8 of these areas had an appreciable incidence of rheumatic fever. Of 26 tracts with rental under $21.65, 25 had a marked incidence of rheumatic fever.

According to the chi squared test, where $N = 1$, a X^2 between 3.5 and 4.0 means that the association could occur by chance alone 5 times in 100. Any larger X^2 is considered significant. For example, if the association of rentals and rheumatic fever yielded a X^2 of 10, with $N = 1$, the association could occur

by chance only 16 times in 10,000. Actually the X^2 in this instance was 61.8. All the associations in Table 2 show a high degree of significance.

Earlier in this article it was stated that C. T. 32, 59, 85, and 24 had been omitted. Inclusion of these 4 tracts in Table 2 would not seriously alter the significance of the data. In Table 2 the chi square for rentals would be changed from 61.8 to 52.7 and the other chi squares would become, reading downward in the table: 37.7, 32.9, 14.9, 17.0, 49.8, and 49.3.

SUMMARY AND COMMENT

This survey again emphasizes the importance of poverty and crowding in the genesis of rheumatic fever. However, poverty and crowding are only signposts pointing to a more fundamental epidemiological principle. It is instructive to compare the information gained by such surveys as this with what is now known about rheumatic infections in military camps in the United States. There is a comparatively high incidence of rheumatic fever in the military forces in Colorado, Idaho, and Utah. These camps are in dry * areas, removed from water courses, and at relatively high altitudes. Needless to say, poverty is no factor, and the housing, sanitation, and diet are excellent. In fact, there are only two features common both to the military forces in these states and to the impoverished civilians in areas with a high incidence of rheumatic fever, namely (1) crowding, and (2) inability to control the microclimate. It is not always possible for either the poor man or the military man to rest whenever he is tired, get warm when he is cold, and keep dry when it is raining. In civilian life, poverty, diet, proximity to water courses, etc., might be said to be important only in so far as they are a part of the two features mentioned, and so reduce the power of the body to resist disease.

* Annual inches rainfall: Colorado 16, Idaho 18, Utah 13.

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Salmonella Isolated in Florida During 1943 with the Combined Enrichment Method of Kauffmann

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NUMEROUS enrichment methods for fecal bacteriology have been described in the literature, and we shall not attempt to enumerate them. It is well known that a suitable selective enrichment is essential for the isolation of enteric pathogens from feces.

A tetrathionate broth for enrichment of typhoid and paratyphoid bacilli was first used successfully in 1923 by Mueller,[1] who showed that it inhibited coliform organisms and allowed typhoid and paratyphoid bacilli to grow profusely. Kauffmann, 1930,[2] described the combined enrichment method for *Salmonella*, which consisted of the original tetrathionate broth of Mueller plus 5 per cent bile and brilliant green 1:100,000 used in combination with Kauffmann's modification of the brilliant green-phenol red agar of Kristensen, Lester, and Jurgens.[3] In 1935, Kauffmann,[4] reported the results of 10,182 feces examinations made by this method in which an increase in *Salmonella* isolations of 700 per cent over previous findings was obtained. In typhoid isolations an increase of 30–40 per cent was noted, and in dysentery isolations an increase of 10–20 per cent. As a result of his experiences he recommends for the examination of pathogenic intestinal bacteria, in addition to the direct streak method, the routine use of the combined enrichment method.

Extensive investigations with this method have been reported by many European workers,[5] by Hormaeche and Peluffo[6] in Montevideo, by Varela[7] in Mexico, and by others with equally favorable results. It was highly recommended to us by Dr. P. R. Edwards, Kentucky Agricultural Experiment Station in Lexington, Ky., who has also confirmed its efficacy. Since it has not, to our knowledge, been used routinely in public health laboratories in this country, the following results are reported to confirm its usefulness.

From March 15, 1943, to January 1, 1944, 8,093 feces specimens have been examined in the central laboratory of the Florida State Board of Health at Jacksonville by the combined enrichment method of Kauffmann, and by direct streaking. A large percentage of these specimens were received from normal food handlers, the remainder were from suspected cases and contacts of enteric infections.

PROCEDURE

Specimens were received in 1 oz. screw-capped bottles containing 10 to 15 ml. of glycerine-saline preservative. A portion of the specimen was streaked directly onto a Wilson-Blair bismuth sulfite agar (WB) plate and an SS agar (Difco) plate. About ½ ml. was placed in tetrathionate-brilliant green

bile enrichment broth. After 16–18 hours' incubation at 37° C. a large loopful of the tetrathionate broth was streaked to a brilliant green agar (BG) plate and also to an SS agar plate as the BG is not favorable for the growth of *Shigella*. Typical or suspicious colonies were picked to Kligler's iron agar (Difco) with 1 per cent sucrose added, and the procedure for identification already described by Galton and A. L. Quan [8] was followed.

The tetrathionate broth and brilliant green agar were prepared according to the formulae of Kauffmann [4] as follows:

Tetrathionate broth—Enrichment medium

A. 90 ml. sterile infusion broth—pH 7.4
5 gm. sterile $CaCo_3$ (precipitated chalk)
10 ml. sterile 50% solution $Na_2S_2O_3$
Sterilize in autoclave
Add 2 ml. unheated solution I + KI
(20 gm. I + 25 gm. KI + 100 ml. H_2O)

B. To 100 ml. of tetrathionate broth add 1 ml. brilliant green solution (1 to 1,000)

C. Sterile beef bile 5%
(5% of a 10% solution of dehydrated oxgall, Difco, was used as fresh bile was difficult to obtain)

The $CaCO_3$ is evenly suspended by continued shaking of the mixtures.

The medium is dispensed into sterile tubes with a sterile pipette in 7–8 ml. amounts. It will keep for some time and is not further heated. We usually prepare 2 or 3 liters at one time.

Brilliant Green Agar (Kristensen, Lester, and Jurgens, modified by Kauffmann)

	Per cent	
Meat extract	0.5	
Peptone (Difco)	1.0	
NaCl	0.5	
Lactose	1.0	
Sucrose	1.0	
Phenol red solution	4.0	(40 ml. N/10 NaOH + 460 ml. H_2O + 1 gm. phenol red)
Brilliant green solution (0.5%)	2.5	ml. per liter
Agar	2	%

Sterilize in autoclave. Reaction should be pH 7.2 – 7.4.

We have found it satisfactory to pour a sufficient number of brilliant green agar plates for 2 or 3 days if they are kept in the refrigerator until used.

RESULTS

The number and per cent of *Salmonella*, typhoid and dysentery isolations obtained by the combined enrichment method and by direct streaking are shown in Table 1.

For several years, prior to the time we adopted the combined enrichment method, Selenite F enrichment, together with direct streaking to SS or DC and WB plates, was used routinely in our laboratory. The results with this method during 1942 and until March 15, 1943, are shown in Table 2 for comparison. Due to the decided decrease in the percentage of positive typhoid cultures with the combined enrichment method, we have given the results obtained with Selenite F in 1941 in Table 3, to show the much greater decrease that occurred in positive typhoid cultures before the change in methods was made. We may also add that the percentage of typhoid isolations in our blood-clot cultures has decreased from 2.07 per cent in 1941 to 0.007 per cent in 1943. The majority of our positive typhoid feces cultures come at present from repeated check specimens on the 18 to 20 known carriers in the state. In spite of this fact, Selenite F was superior to the combined method for the enrichment of *Eberthella typhosa*. We believe better results could be obtained if the tetrathionate broth were also inoculated onto WB agar, as this is, apparently, the most favorable plating medium for the typhoid bacillus.

It may be seen from the results of these examinations that our percentage of positive dysentery isolations has remained almost constant during the 3 year period. We have not, as yet, found the tetrathionate-brilliant green bile broth particularly conducive to the

TABLE 1

Positive Results from the Examination of 8,093 Feces Specimens by the Direct Streak Method and Combined Enrichment Method of Kauffmann

(1943)

	Direct Streak		*Tetrathionate Broth*			
Isolations	*SS*	*WB*	*SS*	*BG*	*Total Positive*	*Per cent Positive*
Salmonella	17	42	74	85	107	1.32
Typhoid	36	76	42	8	79	0.97
Dysentery	77	1	10	1	84	1.03

TABLE 2

Positive Results from the Examination of 3,888 Feces Specimens by the Direct Streak Method and Selenite F Enrichment

(1942–1943)

	Direct Streak		*Selenite F*		
Isolations	*SS or DC*	*WB*	*DC*	*Total Positive*	*Per cent Positive*
Salmonella	9	11	17	22	0.5
Typhoid	49	87	91	110	2.82
Dysentery	50	8	12	54	1.38

TABLE 3

Positive Results from the Examination of 2,096 Feces Specimens by the Direct Streak Method and Selenite F Enrichment

(1941)

	Direct Streak		*Selenite F*		
Isolations	*SS or DC*	*WB*	*DC*	*Total Positive*	*Per cent Positive*
Salmonella	5	4	12	14	0.6
Typhoid	46	73	123	141	6.7
Dysentery	40	0	15	40	1.8

growth of *Shigella*. Kauffmann, however, recommends inoculating the tetrathionate broth to plates after 5 and 16 hours' incubation for best results with *Shigella*. In our work we have been able to streak only after 16 hours' incubation, which probably accounts for our failure.

The results in these tables clearly demonstrate that with the combined method (Table 1), our *Salmonella* isolations have more than doubled those obtained through Selenite F enrichment. It is also significant that 20 cultures were isolated from the brilliant green agar alone. From our experience this method is far superior to Selenite F and direct streak methods for the isolation of *Salmonella*. Although the tetrathionate broth is rather time consuming to prepare, it is well worth the effort. Coliforms are inhibited to such an extent that frequently no growth at all appears on the BG and SS agar plates in negative cultures. *Salmonella* grow readily on BG agar. The colonies are pink or red (when appearing in pure culture), circular, convex and transparent, with even borders. *Pseudomonas aeruginosa* also develops well on this medium, but the colonies can be recognized usually by their flatness, irregular borders and purplish red color. *Alcaligenes* produces red colonies which are raised and slightly opaque. The lactose and sucrose fermenting organisms which grow on BG agar produce opaque, raised colonies, yellowish green in color. We have observed comparatively few BG agar plates on which

pink colonies were found to be slow lactose or sucrose fermenters instead of *Salmonella*, thus the picking of colonies is reduced to a minimum.

Since our results with the combined method were so favorable we began using it in our Miami branch laboratory, late last year. Reports from W. H. Miller help to confirm our opinion of its value. In 2½ months 324 feces specimens were examined and 10 *Salmonella* isolated. During the first 9½ months of 1943, 472 specimens were examined with the Selenite F enrichment broth and no *Salmonella* were found.

TYPES

During the 9½ months that we have used the combined method, 107 strains of 27 types of *Salmonella* have been isolated from 89 persons, both normal carriers and cases, as shown in Table 4.

It is notable that more cultures of *S. meleagridis* were isolated than of any other type. Strangely enough, 12 of the 14 cultures of this species were isolated from food handlers in the same community over a period of 6 weeks. It was found that the persons harboring this unusual type were not ill and that they were employed in the same canning establishment. An investigation by the county health officer has failed to reveal the source of infection. Of the other two cultures, one was obtained from a 5 year old child with enteritis, and one from a food handler. These persons lived in different sections of the state.

One new *Salmonella* type was found, which has been described by Edwards.[9]

TABLE 4

Types Isolated from Feces of 89 Patients

Types of Salmonella	*Group*	*Number Isolated*	*Case*	*Normal*		*History Unknown*
				Non-F.H. *	*F.H.*	
bredeney	A-B	4	..	..	3	1
paratyphi B	"	1	..	..	1	..
paratyphi var. Java	"	3	1 [b]	2 [a]	..	..
derby	"	5	1	..	3	1
san diego	"	2	1	..	1	..
typhimurium	"	5	2	..	1	1
typhimurium var. copenhagen	"	2	2 [c]	..	..	..
bareilly	C	3	..	1	2	..
hartford	"	1	1	..	..	..
litchfield	"	2	..	..	2	..
montevideo	"	8	2	1	3	..
newport	"	9	3	..	3	..
oranienburg	"	11	4 [d]	1	3	1
oregon	"	4	..	..	3	..
sendai	D	4	2	..	1	..
anatum	E	10	2	1	6	1
give	"	5	2	..	2	..
meleagridis	"	14	1	..	12 [e]	..
newington	"	4	1 [f]	..	1	..
senftenberg	"	1	..	..	1	..
carrau	Further groups	1	..	..	1	..
coli	" "	1	..	1	..	..
florida	" "	2	..	..	2	..
gaminara	" "	1	..	..	..	1
inverness	" "	1	..	..	1	..
madelia	" "	2	..	..	2	..
rubislaw	" "	1	..	..	..	1

* F.H.=food handler

[a] One culture isolated from feces of a normal spider monkey.

[b] *S. coli* was isolated from this patient 2 months later. Subsequent specimens failed to reveal either type.

[c] Isolated from feces of two sick pigeons.

[d] *E. typhosa* also isolated from the same specimen in one case which proved fatal.

[e] Flexner dysentery bacilli isolated from same specimen of one food handler.

[f] Sonne dysentery bacilli isolated from patient 1 month later. Neither organism was found in subsequent specimens.

He has given it the name of *S. inverness*.

The occurrence of more than one type in the same person was noted once. *S. anatum* and *S. bredeney* were isolated from an apparently normal Negress, a food handler, 27 years old. Mixed infections were encountered twice. *Salmonella oranienburg* and *Eberthella typhosa* were isolated simultaneously from a fatal infection. *S. meleagridis* and *Shigella dysenteriae* (Flexner) were obtained from the same feces specimen of a normal food handler, whose history failed to reveal previous enteric disturbance.

Approximately two-thirds of the *Salmonella* isolations were obtained from normal persons, 54 being food handlers and 6 not food handlers. A detailed questionnaire was sent to the physician in charge of each person from whom specimens were obtained, when each culture was isolated. Data have been received regarding 46 of the 60 normal carriers. The information so obtained has not revealed a single instance in which an intestinal disturbance was noted prior to isolating a pathogenic organism. This indicates that the occurrence of *Salmonella* in the the stools of apparently healthy persons is not uncommon in this region.

CONCLUSIONS

In our hands, the combined enrichment method of Kauffmann has proved to be excellent for the isolation of *Salmonella* from routine feces specimens. We attribute our 164 per cent increase in positive *Salmonella* finding to the efficacy of this medium.

It did not prove as favorable for the isolation of typhoid and *Shigella*. However, with the inclusion of the following measures in our present method, more satisfactory results could, no doubt, be obtained: (1) Inoculation of tetrathionate broth after 16 hours' incubation to a WB agar plate. (2) Inoculation of tetrathionate broth after 5 hours' incubation to an SS agar plate.

We have continued to find in Florida, a wide variety of *Salmonella* types, including all of the antigenic groups. It is possible that this occurrence is due in part to the large numbers of transient persons continually moving into and out of the state from many points of the globe.

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Epidemiological Study of Lymphogranuloma Venereum, Employing the Complement-Fixation Test

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IMMUNOLOGICAL evidence of infection with the virus of lymphogranuloma venereum is frequently encountered in persons who show no sign of the clinical disease. This brings up certain problems, such as the actual prevalence of the infection, the duration of the immune reaction, and the possibility that infection can be acquired either *in utero* or through portals other than the genital tract. Some information on these problems can be had by studying groups of people for evidence of infection. While the Frei test for lymphogranuloma has been carried out on a considerable number of people as a part of the routine work-up in many venereal disease clinics, the results obtained have provided little information on the population as a whole. With the exception of a study in Puerto Rico, by Morales and Carrera,[1] there has been no systematic application of the Frei test to a study of the epidemiology of the disease. As a survey method it is somewhat cumbersome, because it necessitates two visits with each person tested. When Rake and his associates developed a simple complement-fixation test for lymphogranuloma venereum, a method was provided which was more readily applied to epidemiological investigations. The present report is chiefly an analysis of the results of a series of complement-fixation tests done on white and Negro clinic patients at Grady Hospital, Atlanta. It includes, in addition, the results of tests on the sera of new-born infants and their mothers, from the Colored Obstetrical Service of the same hospital.

METHODS AND MATERIAL

Kahn Test for Syphilis—The data in this article refer to the results obtained using the Standard Kahn Test, performed in the Grady Hospital laboratories.

Complement-Fixation Test for Lymphogranuloma Venereum — The technic employed was exactly the same as that outlined by McKee, Rake, and Shaffer.[2] The antigen used was the commercial preparation, Lygranum C. F. (Squibb). Known positive and negative sera were included as controls in each group of tests. Each serum was diluted 1–5 and 1–20 before mixing with the other components, giving final dilutions of 1–25 and 1–100. These were set up against normal yolk sac material, as well as the infected yolk sac material. The result was interpreted as positive if there was complete or almost complete fixation with

either dilution of serum in the presence of the infected yolk material. No case was encountered in which there was a prozone giving fixation with the higher serum dilution and not with the lower.

The complement-fixation test could not be interpreted in 34 of the 879 sera received from the out-patient clinics. In 7 of them the difficulty was anti-complementary action of the serum. In the remaining 27 there was fixation of complement in the presence of normal yolk sac control material. This reaction has been noted occasionally since the test first began to be used.[3] It is found almost exclusively in the sera of persons with syphilis. In the present study 24 of the 27 sera which showed it gave positive Kahn reactions. Two of the others were from young women with chronic pelvic inflammatory disease, and the third was from a young man who gave a history of chancre 3 years previously, and who had received 7 intravenous treatments immediately after he had developed the chancre. There were 14 males and 13 females in this group. Twenty-six of them were Negroes. The ages of the 27 patients were distributed fairly uniformly throughout all periods of life, including 2 infants with congenital syphilis and 4 persons who were more than 55 years of age.

Clinical Material—For the studies of the age and sex incidence 879 sera were received from persons attending the various out-patient clinics of the hos-

TABLE 1

Incidence of Positive Serologic Tests for Lymphogranuloma Venereum and Syphilis in Colored Females, According to Age

Age Group	Lymphogranuloma Venereum Complement-Fixation			Kahn		
	Number Tested	Number Positive	Per cent Positive	Number Tested	Number Positive	Per cent Positive
0–4	24	1	4.2	21	2	9.5
5–9	12	1	8.3	12	1	8.3
10–14	17	3	17.6	16	2	12.5
15–24	58	23	39.7	57	15	26.3
25–34	64	27	42.2	63	24	38.1
35–44	37	16	43.3	37	13	35.1
45–54	27	9	33.3	27	9	33.3
55+	23	8	34.8	22	6	27.3
Total	262 *	88	33.6	255 *	72	28.2

* No Kahn test on 7 patients

TABLE 2

Incidence of Positive Serologic Tests for Lymphogranuloma Venereum and Syphilis in Colored Males, According to Age

Age Group	Lymphogranuloma Venereum Complement-Fixation			Kahn		
	Number Tested	Number Positive	Per cent Positive	Number Tested	Number Positive	Per cent Positive
0–4	29	0	0	25	0	0
5–9	16	1	6.2	16	2	12.5
10–14	18	0	0	18	1	5.6
15–24	33	9	27.3	31	7	22.6
25–34	43	22	51.2	39	14	35.9
35–44	29	14	48.2	26	9	34.6
45–54	30	14	46.7	29	14	48.3
55+	37	18	48.6	34	7	20.6
Total	235 *	78	33.2	218 *	54	24.8

* No Kahn test on 17 patients

pital between November, 1942, and May, 1943. The sera were usually obtained in the course of a bleeding for a Kahn test. Since it is more or less routine to test all new clinic patients for evidence of syphilis, whatever their illness, these sera may be considered as being from an unselected group of clinic patients. Unfortunately, the clinical data obtainable from the records were often so brief, because of the minor nature of the illnesses, that it was not feasible to attempt a correlation between the results of the serologic test for lymphogranuloma and history of other evidence of this disease.

The number of white males tested was comparatively small, because many were either in military service or were in an economic bracket which made them ineligible for clinic care in a charity hospital.

RESULTS

In Tables 1 and 2 are shown the results of complement-fixation tests for lymphogranuloma venereum on the sera of 497 Negroes, arranged according to age. For comparison, the results of Kahn tests on the same persons are included in the tables. Positive tests for lymphogranuloma venereum were given by approximately 33 per cent of the entire group of colored males and females. The incidence of positive Kahn reactions was slightly lower, being 24.8 per cent for males and 28.8 per cent for females. When considered by age group it is observed that the proportion of positive tests for both diseases followed a somewhat similar pattern, being comparatively low in children under 15 years of age, but mounting rather sharply during the next decade, and then remaining at about the same level in succeeding age groups. If the data on children under 15 years of age are excluded, serologic evidence of lymphogranuloma venereum is found in 39.7 per cent of colored females and 44.8 per cent of colored males. The rates for positive Kahn tests then become 33.0 per cent and 32.1 per cent respectively.

The results of the same serologic tests on 348 white persons are presented in Tables 3 and 4. Evidence of lymphogranuloma venereum was given by 26 of 229 white females, an incidence of 11.4 per cent, and by 10 of 119 white males, an incidence of 8.4 per cent. The rates for positive Kahn tests in the same group were 7.1 per cent and 10.3 per cent respectively. Correction of these figures, by excluding data on children under 15 brings the lymphogranuloma incidence up to 12.1 per cent for females and 11.6 per cent for males, while the percentage of sera giving positive Kahn tests becomes 6.9 and 14.7 respectively. Because of the small number of white children in the present series, the results obtained in persons over 14 years of age are undoubtedly a better basis for comparison of prevalence of these diseases in the white and Negro clinic patients.

In view of the similarities in the results of serologic tests for syphilis and lymphogranuloma and since it has been claimed that persons with syphilis may give false positive complement-fixation reactions for lymphogranuloma,[4] it seemed advisable to determine the frequency with which positive tests for both diseases had occurred in single individuals. The results of this analysis are given in Tables 5, 6, 7, and 8. These show that the similarity in incidence of positive tests for syphilis and lymphogranuloma was not due to the fact that positive tests for both diseases were largely given by the same persons. Actually the number of persons giving a positive test for one disease and a negative test for the other was in all groups considerably larger than the number of persons giving positive tests for both diseases. An additional point in this connection is the

TABLE 3

Incidence of Positive Serologic Tests for Lymphogranuloma Venereum and Syphilis in White Females, According to Age

Age Group	Lymphogranuloma Venereum Complement-Fixation			Kahn		
	Number Tested	Number Positive	Per cent Positive	Number Tested	Number Positive	Per cent Positive
0- 4	4	0	0	4	0	0
5- 9	3	0	0	3	1	33.3
10-14	16	1	6.2	16	1	6.2
15-24	58	6	10.2	45	2	4.4
25-34	41	4	9.8	29	3	10.3
35-44	36	5	13.9	33	2	6.1
45-54	23	5	21.7	23	3	13.0
55+	48	5	10.4	45	2	4.4
Total	229 *	26	11.4	198 *	14	7.1

* No Kahn test on 31 patients

TABLE 4

Incidence of Positive Serologic Tests for Lymphogranuloma Venereum and Syphilis in White Males, According to Age

Age Group	Lymphogranuloma Venereum Complement-Fixation			Kahn		
	Number Tested	Number Positive	Per cent Positive	Number Tested	Number Positive	Per cent Positive
0- 4	7	0	0	7	0	0
5- 9	9	0	0	9	0	0
10-14	19	0	0	16	0	0
15-24	9	0	0	9	1	11.1
25-34	13	2	15.4	12	0	0
35-44	12	2	16.7	12	4	33.3
45-54	16	2	12.5	15	2	13.3
55+	34	4	11.8	27	4	14.8
Total	119 *	10	8.4	107 *	11	10.3

* No Kahn test on 12 patients

different correlation between the two tests in the white and Negro patients. While 60 per cent of both Negro males and females with positive Kahn had positive lymphogranuloma fixation, only 18 and 21 per cent of the white males and females with syphilis gave this reaction. If syphilis were a frequent cause of false positive tests for lymphogranuloma, one would not expect this racial difference.

An investigation of the complement-fixation reaction in new-born Negro infants was carried out by testing 37 infants and their mothers. It was found that in every case the result in the infant was essentially the same as that of its mother. In 23 of the 37 cases the test was negative in both, while in the remaining 14 the result was positive in both. Furthermore, in the positive cases the titers in infant and mother agreed closely. Follow-up tests were obtained from 2 to 4 months later on 9 of the 14 infants who had given a positive test at birth. These were all found to be negative at the time of the second examination.

After this investigation of new-borns had been completed, a similar study, done at Harlem Hospital, New York City, was published by Levine, Bullowa, and Scheinblum.[5] Their findings were similar to ours.

TABLE 5

Frequency With Which Positive Kahn and Positive Lymphogranuloma Venereum Fixation Tests Were Associated

Colored Females, According to Age

Age Group	Kahn+ L.V.C.F.+	Kahn+ L.V.C.F.−	Kahn− L.V.C.F.+	Kahn− L.V.C.F.−
0– 4	..	2	1	18
5– 9	..	1	1	10
10–14	1	1	2	11
15–24	12	3	9	33
25–34	15	9	12	27
35–44	9	4	7	17
45–54	3	6	6	12
55+	3	3	4	13
Total	43	29	42	141

L.V.C.F. = Lymphogranuloma venereum complement-fixation

TABLE 6

Frequency With Which Positive Kahn and Positive Lymphogranuloma Venereum Fixation Tests Were Associated

Colored Males, According to Age

Age Group	Kahn+ L.V.C.F.+	Kahn+ L.V.C.F.−	Kahn− L.V.C.F.+	Kahn− L.V.C.F.−
0– 4	..	..	..	24
5– 9	..	2	1	13
10–14	..	1	..	17
15–24	3	4	6	19
25–34	8	6	13	12
35–44	9	..	5	12
45–54	9	5	5	10
55+	3	4	14	13
Total	32	22	44	120

L.V.C.F. = Lymphogranuloma venereum complement-fixation

TABLE 7

Frequency With Which Positive Kahn and Positive Lymphogranuloma Venereum Fixation Tests Were Associated

White Females, According to Age

Age Group	Kahn+ L.V.C.F.+	Kahn+ L.V.C.F.−	Kahn− L.V.C.F.+	Kahn− L.V.C.F.−
0– 4	..	..	..	4
5– 9	..	1	..	2
10–14	..	1	1	14
15–24	..	2	4	39
25–34	1	2	..	26
35–44	..	2	5	26
45–54	..	3	5	15
55+	2	..	2	41
Total	3	11	17	167

L.V.C.F. = Lymphogranuloma venereum complement-fixation

TABLE 8

Frequency With Which Positive Kahn and Positive Lymphogranuloma Venereum Fixation Tests Were Associated

White Males, According to Age

Age Group	Kahn+ L.V.C.F.+	Kahn+ L.V.C.F.−	Kahn− L.V.C.F.+	Kahn− L.V.C.F.−
0– 4	..	..	..	7
5– 9	..	..	..	9
10–14	..	..	..	16
15–24	..	1	..	8
25–34	..	..	2	10
35–44	1	3	1	7
45–54	..	2	2	11
55+	1	3	..	23
Total	2	9	5	91

L.V.C.F. = Lymphogranuloma venereum complement-fixation

DISCUSSION

There are two possibilities of error in the interpretation of the complement-fixation test for lymphogranuloma venereum. The first is that the test does not differentiate between antibodies for the agent of lymphogranuloma venereum and other viruses in the lymphogranuloma-psittacosis group.[6, 7] However, so far as is known at present, none of the other members of this group causes infections in human beings in anything like the frequency found in the present study. Furthermore, none of the others is known to exhibit the special affinities for race and age group which were found in this work. A second difficulty is the possibility that persons with other diseases may give false positive complement-fixation tests for lymphogranuloma venereum. Knott and his associates state that the specificity of the test is challenged by "the large number of positive reactions found in the sera of patients giving no history and presenting no clinical signs of the disease and also by the possible cross-reactivity with other venereal diseases, particularly syphilis."[4] Their first objection is not very persuasive, since there is abundant evidence that many specific infections occur without inducing obvious disease. These workers do, however, cite some observations

on their own patients which indicate that a false positive complement-fixation reaction for lymphogranuloma venereum may occasionally occur in syphilitic individuals. On the other hand, Rake and his associates have furnished evidence that false positive complement-fixation tests for lymphogranuloma venereum due to syphilis are at least very rare.[8, 9] The fact that immunological evidence of lymphogranuloma venereum is so common in individuals with venereal infections other than syphilis also appears to be significant. It would be surprising indeed if infection not only with the spirochete of syphilis, but also with the gonococcus and with the Ducrey bacillus were capable of giving rise to false positive serological evidence of this virus disease. We think it probable that the high incidence of positive tests for lymphogranuloma in individuals with syphilis and other venereal diseases is due to actual associated lymphogranuloma infection, even in the absence of clinical signs.

The findings in the present studies afford little evidence of congenital transmission of lymphogranuloma venereum. Although antibodies were found in the sera of some new-born Negro infants, they were probably the result of passive transfer from the mothers, since they had disappeared by the time the infants reached 4 months of age. The few positive tests which were obtained in older children may have been caused by acquired lymphogranuloma venereum infection or by infection with some other member of the lymphogranuloma-psittacosis group. Acquired lymphogranuloma venereum in children is not very rare; it may result from the use of contaminated enema tips, from close contact with infected adults, or from venereal practices.[10]

It is of interest that positive tests for lymphogranuloma venereum were found almost as frequently in the older groups as in the age periods of greatest sexual activity. One might infer from this that the causative agent persists in the body throughout the life of the host, providing an ever-present antigenic stimulus.

SUMMARY

Complement-fixation tests for lymphogranuloma venereum were done on 879 hospital clinic patients, and the results were analyzed according to race, age, and sex. Approximately 40 per cent of adult Negroes and 12 per cent of adult white persons gave positive reactions. There were only 6 positive reactions among 116 Negro children under the age of 14 years, and only 1 positive reaction among 58 white children in the same age group. A sharp rise in incidence occurred after the age of 14 years. This is believed to be due to acquired venereal infection. The incidence of positive reactions was approximately the same in all age groups beyond the 4th decade. This persistence of an immune reaction in age groups where sexual contacts are less frequent suggests the possibility that the virus persists in the body, providing continued antigenic stimulus.

Comparisons were made of the complement-fixation reaction in new-born Negro infants and their mothers. It was found that immediately after birth the reaction in the infant's serum is the same as that of the mother. Nine infants who had given positive reactions were re-tested 2 to 4 months later; they had all become negative. It appears, therefore, that a positive test at birth is due merely to the passive transfer of antibodies from the mother.

The error introduced by the fact that infection with other members of the lymphogranuloma-psittacosis group of viruses will give rise to positive complement-fixation test for lymphogranuloma venereum cannot be assessed. It

is not likely, however, that the prevalence of infection by the other agents in this group is sufficiently great to distort markedly the picture of the prevalence of lymphogranuloma venereum.

A comparison was made of the results of the Kahn test and the results of the complement-fixation test for lymphogranuloma venereum. The incidence of positive Kahn reactions in the entire group was 32 per cent for adult Negroes and 9 per cent for adult white persons. The distribution of positive results according to age followed much the same pattern as had been the case with lymphogranuloma venereum. These similar findings appear to be compatible in view of the fact that both diseases are acquired by sexual contact. Reasons are given for the belief that false positive tests for lymphogranuloma venereum given by individuals with syphilis did not play an important part in producing the similarities.

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New York State Caries-Fluorine Demonstration

The New York State Department of Health recently began the dental examinations of school children in Newburgh, N. Y., which, with the city of Kingston, N. Y., is collaborating in a long range demonstration to determine the practicability of mass protection against dental caries by adding fluorine to public drinking water supplies. Newburgh will be the study area and Kingston the control. Dental inspections of about 1,000 children aged 5 to 14 years will be made in each city. The purpose is to obtain at the outset of the demonstration a dental caries index which will serve as a basis of comparison with the terminal figures at the end of 10 years, the length of time which must elapse before the full benefits of the water treatment are realized. Included in the study will be a pediatric investigation of a representative sample of the child population, including a general physical examination, urine analysis, and x-ray films of the long bones and centers of ossification.

Serological Types of Hemolytic Streptococci Isolated from Multiple Cases of Scarlet Fever in the Same Households

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THE modern concept of the epidemiology of scarlet fever embraces both the case and the carrier as sources of the new case. The differentiation of hemolytic streptococci into serological types [1] led to the hope that the epidemiology of scarlet fever could be more clearly elucidated by relating the carrier to the case or the case to another case in a direct chain of epidemiologic circumstance. However, the finding that most of the serological types may be the cause of scarlet fever,[2] together with fluctuations in the prevalence of the various types in the same population groups with reference to time and space, have complicated, rather than clarified, the epidemiologic relationships involved. Although in clearly circumscribed outbreaks, one type is usually the predominant cause of disease,[3] the movement of a particular type is followed with difficulty in any sizable community. Indeed, endemic scarlet fever does not appear to be a function of any single serological type of hemolytic streptococcus; but rather a fluctuation in the incidence of several toxigenic types found among carriers in the population. Since the dissemination of the hemolytic streptococcus may be accomplished through individuals who present no recognizable symptoms, it is usually not possible to determine whether a given case represents the introduction of a new serological type; nor is it always possible to determine with certainty whether a given group of cases are related to one another in the epidemiologic sense.

The ideal situation for studying the relation between cases would be afforded by an outbreak of the disease following the single introduction of a single serological type of hemolytic streptococci into a previously uninfected community. Such an opportunity is rarely presented to the epidemiologist. Multiple cases in families present perhaps the nearest approach to a readily accessible grouping of epidemiologically related cases; except in those comparatively rare instances in which infection follows mass exposure to the same infectious agent through accidents of environmental hygiene.[4]

Chapin's classic studies [5] of familial aggregation in measles, diphtheria, and scarlet fever clarified the basic laws governing the dissemination of these

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NOTE: The opinions presented are those of the authors and do not necessarily reflect the policies of the Navy Department.

infectious agents. These agents, under conditions of exposure in a family, when introduced, tend to spread throughout the household. They cause high secondary attack rates among the susceptibles, and in the case of *Corynebacterium diphtheriae* and hemolytic streptococci, high carrier rates as well. Aycock and Eaton[6] in a study of Chapin's data, observed that secondary cases of scarlet fever, like those of measles, occur in two groups—(1) common source with, and (2) truly secondary to the first case in the family. They observed that 10 per cent of all secondary cases of scarlet fever occur more than 24 days removed from the first case, as contrasted with measles, where not more than 1½ per cent of the secondary cases occur so far removed from the initial case. The range within which secondary cases of scarlet fever occur appears to be due both to the variation in the incubation period and to the length of the period of infectivity; or possibly to the chance occurrence of another case in the same family. It seemed that the serological classification of hemolytic streptococci isolated from multiple cases of scarlet fever in the same household might establish bacteriological proof of the epidemiological relationship of the secondary case to the initial case in a given household; and at the same time, provide readily obtainable data concerning the spread of a single serological type in a previously uninfected group of epidemiologically related susceptibles.

During a 26 month period, throat cultures on 824 of 1,048 scarlet fever admissions to a contagious disease hospital in a local community * were examined for hemolytic streptococci. Of these, 598 were positive for Lancefield Group A hemolytic streptococci. These strains were classified as to serological type according to the slide agglutination method of Griffith.[1] (The totals include strains from a previously reported study.[7]) Thus, cultural and serological data are available on 57.1 per cent of all scarlet fever admissions during this period. Of the cases studied, 134 (22.4 per cent) occurred as multiple infections in 55 families. There were seven different serological types of hemolytic streptococci involved in these 55 households, and, as would be expected, the type isolated from multiple cases in a given household was the same in each instance. These data are summarized in Table 1.

TABLE 1

Serological Types of Hemolytic Streptococci Isolated from Multiple Cases of Scarlet Fever Occurring in the Same Households

Massachusetts Family Study	*No. Families with Multiple Cases of Each Type*	*Total Cases*
Griffith Types Isolated from Multiple Cases		
2	21	53
1	14	32
8	8	21
6	7	16
19 *	3	6
5	1	3
15	1	3
Total, seven serological types	55	134
Miscellaneous Families		
Griffith Types Isolated from Multiple Cases		
2	4	13
1	3	7
6	1	2
Total, seven serological types, all families	63	156

* Weak cross-reaction with types 4, 24, 26, 29.

All the various combinations of time intervals between the onset of cases in these families are plotted in Figure 1; together with data on 8 family outbreaks obtained from other sources,* and 57 cases secondary to primary

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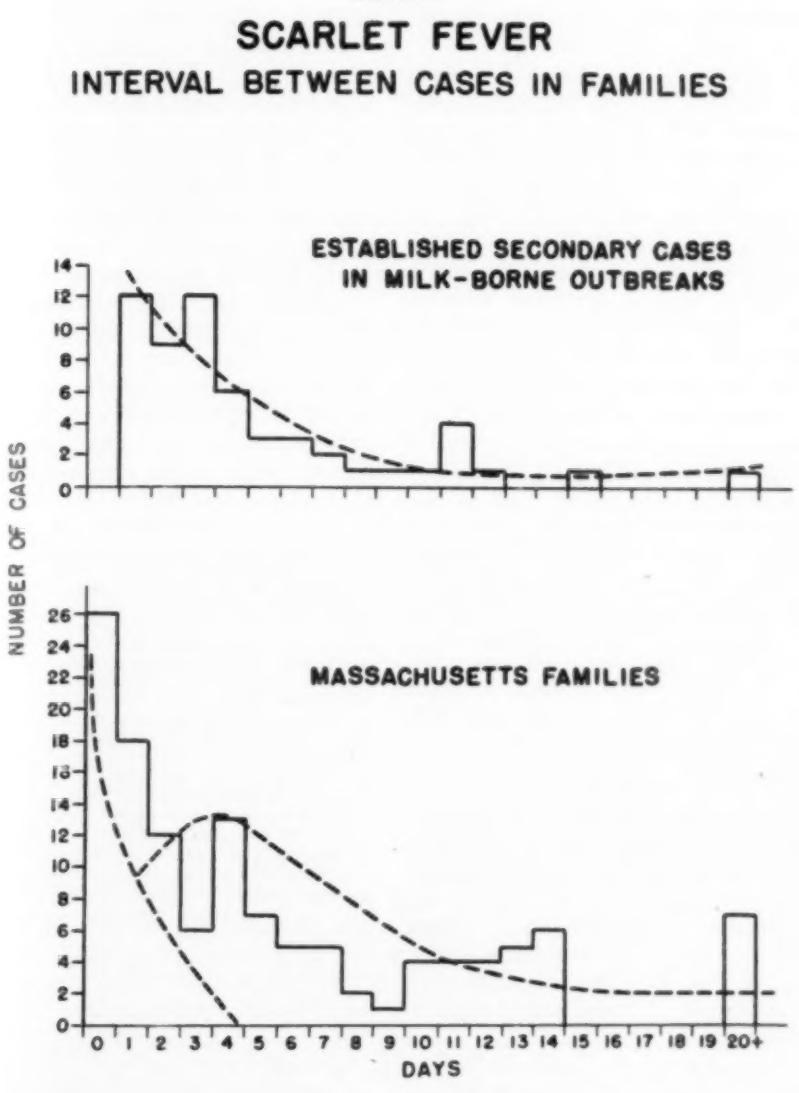
* e.g., in a theoretical family, cases a, b, and c occur. Time intervals ab, ac, and bc are plotted.

FIGURE 1



common-source cases from other outbreaks,† a total of 213 cases in all. The broken lines in the lower graph represent an estimated division into common-source and secondary cases, assuming that the incubation period is most frequently between 3 and 4 days. The protracted course of family outbreaks of streptococcus infection is emphasized by the relatively high percentage of secondary cases which occurred 20 or more days following the original case or cases of scarlet fever in the given families. The maximum intervals between the primary and secondary case in the same household,

† From the data available for study, cases truly secondary to primary common-source cases could be established only on single secondary cases occurring in 57 families, hence the upper graph in Figure 1 shows only 57 intervals.

however, do not necessarily indicate the maximum duration of the convalescent carrier state.

It is evident in these studies then, that the occurrence of secondary cases of scarlet fever after a prolonged interval was not due to the chance introduction of a new infection into the same household, but was more likely the result of a spread through the family following the introduction of a single serological type of hemolytic streptococci. Such spread is not limited to case to case transfer, but includes non-scarlet and subclinical infection as well as intermediate carriers within the family. As pointed out by Gordon [2]:

> . . . infection with a streptococcus that produces erythrogenic toxin can lead to two kinds of clinical reaction. The result in a Dick negative subject—a host with antitoxic immunity—is a local infection, corresponding to sore throat or tonsillitis. A Dick positive subject, lacking antitoxic immunity, develops the complete syndrome of scarlet fever . . . Field studies . . . showed a well-marked frequency of coincident sore throat or upper respiratory infection among family contacts of patients with classic scarlet fever.

SUMMARY

Thus, family outbreaks in general, probably are single-source outbreaks caused by a single serological type of hemolytic streptococci, whereas on the other hand, scarlet fever in a sizable community appears to be caused by multiple types—perhaps due to the introduction of a number of strains from different sources. It may perhaps be postulated that endemic scarlet fever is composed of numerous outbreaks occurring in basic units of population such as the family, the whole of which gives the varied type-pattern characteristic of the disease in its endemic form. In other words, the epidemiology of endemic scarlet fever is complicated by the unavoidable multiplicity of human contacts, but in those circumstances where the movement of a particular serological type of hemolytic streptococci can be followed, person to person spread can be demonstrated.

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A Citrate Gold of Optimal and Reproducible Sensitivity for Use in the Colloidal Gold Reaction

Its Preparation and Control

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VARIOUS technics for preparing sols for use in the colloidal gold reaction have been proposed in the literature as modifications of the original technic,[1] in which formol was employed for the reduction of the gold chloride. The preparation of this original gold sol seemed too difficult for the average clinical laboratory. It was easy to find numerous other reducing agents, which apparently eliminated the difficulties and obviated the occasional failures of the formol method. The fundamental factors governing the results of the gold reaction were, however, in the beginning, entirely unknown. On the basis of present knowledge, it seems quite evident that every modification is bound to yield results inferior to those of the original technic, if the following fundamental factors are neglected: (1) the pH of the milieu, which has an optimum value of 7.4; (2) sensitivity of the gold sol, adapted to this required pH of the milieu; (3) aging of the gold sol.

Most of the modifications represented a deterioration of technic erroneously ascribed to the original gold reaction, and led to considerable discredit of the test. The quantitative gold reaction,[2] on the other hand, has twofold advantages. First, it meets the fundamental requirements to which reference has been made even better than the original method. Second, it meets the demand for an easy technic; the method is even simpler to perform than the description of it would indicate.

THE REPLACEMENT OF FORMOL GOLD BY A CITRATE GOLD OF SIMILAR SENSITIVITY

The preparation of gold sols for the gold reaction through the use of sodium citrate in the reduction of gold chloride was introduced by Borowskaja.[3] She employs the gold sol obtained with a citrate concentration of 1:2,000; for convenience, it may be referred to as "citrate gold 1:2,000." A peculiar advantage of the citrate reduction consists in the fact that no strict adjustment of the reduction pH is required, provided it is acid. It is to be noted that this reduction pH may be quite different from the optimal pH of the milieu in the test itself, which is fixed at pH 7.4. In the formol method, on the other hand, unless reduction occurs within a narrow range, slightly above pH 7.0, proper dispersion of the particles in the sol does not occur. The pH of citrate gold 1:2,000 is about 5.8–6.0, deter-

mined by the potentiometer, i.e., much lower than that of formol gold. This acid gold sol is orange-red in color and of high transparency, which indicates a very small particle size and therefore much lower sensitivity than formol gold. Aside from the changes induced by aging, the sensitivity of a gold sol depends, first, on the size of the particles, and second, on the pH of the milieu. In order to obtain correct curves in the gold reaction, the pH must be approximately 7.4 [2]; an orange-red gold sol of small particle size exhibits an unsatisfactory sensitivity at this pH. On the other hand, if the sensitivity is raised, as it is done in Borowskaja's modification by using a pH much below 7.4, false paretic curves are bound to occur in conditions such as purulent meningitis. Therefore, citrate gold 1:2,000 is not satisfactory to replace formol gold.

Sodium citrate or tartrate as reducing agents exhibit additional advantages not considered by Borowskaja and which may be utilized without any interference from an unsatisfactory pH of the milieu. Stable gold sols of widely varying but definite particle size may be obtained by keeping the concentration of the acid gold chloride constant, at 1:10,000, while varying the citrate concentration from 1:1,000 to about 1:15,000. In such a series of sols, the color and particle size vary progressively; the sol with the smallest particle size is orange-red in color and has the highest transparency. Those of larger particle size are burgundy-red, violet, and finally blue. The size of the particles in blue gold sols is so large that the sol is unstable. When the pH of the milieu in the test is 7.4, citrate gold 1:10,000, quite different from citrate gold 1:2,000, has about the same sensitivity as formol gold. It is much softer and more acid than citrate gold 1:2,000; its pH lies around 4.8–5.0. To use the sol in the test, its acidity must be neutralized, by employing strong buffers of pH 7.4 as diluent instead of saline.

PRESCRIPTION FOR THE PREPARATION OF REPRODUCIBLE CITRATE GOLD 1:10,000

For the preparation of citrate gold sols 1:10,000, relatively pure distilled water is used. The requirements of purity, however, are far less severe than in the formol method, since a single distillation is sufficient. In this laboratory, untreated spring water is rendered definitely alkaline and then treated with permanganate in sufficient amount so that some color remains after storage for 1 week in sunlight. Actually any source is satisfactory if the water, after a single distillation, yields satisfactory gold sols. The water is then distilled once in Pyrex stills of 5 liter capacity (Scientific Glass Apparatus Company, No. J-1333 Yoe distilling apparatus, interjoint, Pyrex glass). After generous steaming, a first run of about 500 ml. is discarded. The pure distilled water is collected in Pyrex Erlenmeyer flasks which are cleaned from time to time by steaming. All glassware is scrupulously cleaned and is used for no other purpose. The original source of the water is satisfactory if a single distillation yields a pure distilled water with which hardly any failures occur in the preparation of citrate gold 1:10,000. As a rule, the water is distilled one day before the preparation of the gold sol.

The acid gold chloride at present used in this laboratory is "Baker's purified." Gold chloride has an inconstant water content, with a resulting variability in the gold content. Nevertheless, in preparing the gold sol for use in a quantitative gold reaction, the complete contents of six vials may be satisfactorily dissolved in pure distilled water. Each vial contains 15 grains, equivalent to 0.97 grams. The gold chloride is dissolved in pure dis-

tilled water up to a volume of 400 ml., yielding a stock solution of almost 1.5 per cent. The solution is kept in a brown bottle with a glass stopper. For accurate quantitative work, and particularly for experimental work concerned with standardization, the use of gold chloride solutions of tested gold content is indicated. The simple permanganate titration [4] may be used for this purpose, but from the practical standpoint the testing of the prepared sol turbidimetrically is simpler and equally satisfactory. For preparing the 1.5 per cent sodium citrate solution, the weighing out of 3.0 gm. of Baker's T. P. on a good torsion balance and dissolving in pure distilled water up to 200 ml. yield sufficiently accurate results. The solution must be freshly prepared, since it is readily contaminated with molds.

In boiling the citrate gold, the volume and the shape of the container are of significance. A 2 liter Florence flask, not a beaker, of Pyrex glass is reserved for this particular purpose; batches of 1,500 ml. are invariably prepared. The flask is heated on a heating shield over a very large burner. Since it is important to keep the evaporation as constant as possible, an occasional check on this factor is indicated, as well as on the time until boiling occurs; the use of a reflux cooler is unnecessary. Before the gold sol is boiled, the flask is cleaned by boiling pure distilled water in it for 10 minutes. After the flask has been rinsed, 1½ liters of pure distilled water are brought to a rolling boil.

The gold chloride is then added with a 10 ml. Ostwald pipette, the flask is vigorously twirled, and 10 ml. of 1.5 per cent citrate are added in the same way. The flask is again twirled and then returned to the flame. First, a blue color appears, which, after some time, sharply changes to red. Then the boiling is continued with lowered flame for 3 minutes, at which time the preparation is complete.

The gold sol cannot be stored in ordinary glass, as recommended by Borowskaja, because the walls of cheap glassware may become lined with a precipitate of blue gold within 24 hours. Two liter Pyrex bottles with glass stoppers are satisfactory. The bottle is first rinsed with a small portion of the hot gold sol and after the rest is poured into it, it is cooled for ½ hour in a vat with cold tap water. The Florence flask is rinsed with pure distilled water before the next batch is boiled. During the cooling, the storage bottle is closed with a cotton plug covered with cheesecloth, subsequently replaced by the glass stopper, which may be covered with paraffin to prevent sticking. The storage bottles are cleaned by steaming. Aqua regia is used only to remove a visible precipitate of gold, followed by a most thorough rinsing and, finally, steaming. After the turbidity has been checked to determine that it is in the normal range, the batches of citrate gold are pooled. At present, the gold sol is kept in a refrigerator compartment at a temperature of from 9 to 14° C. The aging is more rapid at higher temperatures, while on the other hand, the gold sol coagulates when it freezes. In any laboratory in which a sufficient number of cerebrospinal fluid examinations are performed, interference by aging is best eliminated by preparing only a sufficient amount of citrate gold for 1 week's use. The extent of aging may be determined by the turbidimetric test; however, the citrate gold is so inexpensive and so easy to to prepare without failures that it is not worth while to run the risk of using older citrate golds.

THE TURBIDIMETRIC CONTROL OF THE REPRODUCIBILITY AND AGING OF CITRATE GOLD 1:10,000

The reproducibility of citrate gold

1:10,000 depends primarily on the relative purity of the distilled water used; the purity is easily and reliably checked by the turbidimetric testing of the gold sols prepared from it. In order to demonstrate the effect of impurities, three experimental batches of gold sol were prepared; the first with "pure distilled water" prepared according to the preceding prescriptions; the second with "ordinary distilled water" the use of which was recommended by Borowskaja as a valuable simplification embodied in her technic; the third with pure distilled water to which 0.2 mg. per cent copper was added in the form of copper sulfate. The three gold sols exhibited to the naked eye such a spectacular difference in color and transparency that there could be no doubt about the fact that there was great difference in the particle size; the second and third batches were easily recognizable failures. The fact was observed, with the help of adequate test fluids, that the sensitivity of freshly prepared citrate gold 1:10,000 runs exactly parallel to its turbidity; after prolonged aging this no longer holds true.

The turbidity is determined with the photoelectric colorimeter; the Klett-Summerson is used in this laboratory with red filter No. 66 and the ordinary macro tubes, the interchangeability of which must be checked; the zero point is set with distilled water. The turbidity of the above three batches was equivalent to 138, 64, and 35, respectively; the last named batch was pale red in color and of highest transparency. These three batches when employed in the gold reaction, of course, yielded entirely different results. The turbidity of satisfactory citrate gold 1:10,000 lies around 130; variations from 120 to 140, or even more, are of no demonstrable significance. The turbidity of gold sols begins to decrease even during the cooling of the freshly prepared gold sol and continuously afterward; after 3 days, there is a progressive slowing in the rate of change. In order to maintain fairly uniform conditions, the turbidity of a batch is determined after about 24 hours in the refrigerator at from 9 to 14° C.

Failure to obtain uniform citrate gold sols is often due to contamination of the ordinary distilled water. When the distilled water absorbs even small traces of copper from the still, pipes, or fixtures, marked variation in the turbidity of citrate gold sols prepared with such water will result. The effect of contamination with copper is shown in the third batch. There are additional possibilities of contamination in ordinary distilled water; in large stills with a float by which a constant level in the steam generator is maintained, there is no opportunity for volatile contaminating substances to be removed that otherwise are eliminated by discarding the first run. The failures invariably occurring when ordinary distilled water was used were exclusively associated with a too low turbidity. There is no reason for endeavoring to use ordinary distilled water, especially since a single distillation in a good still suffices for the preparation of satisfactorily pure distilled water.

As previously stated, the gold content of the stock solution may vary because of the inconstancy of the commercial gold chloride, which does not lend itself to the accurate preparation of a standard solution. The reproducibility of citrate gold 1:10,000 depends mainly on the purity of the distilled water and the gold content of the stock solution. The citrate solution can be readily prepared with accuracy, and failures in the preparation of gold sol in this laboratory have never been attributable to the citrate solution. Satisfactory purity of the distilled water is demonstrated if a fairly con-

stant turbidity is obtained in the examination of different batches prepared with the same gold solution. If the standard turbidity of about 130 is not obtained when "tested pure" distilled water and a new stock solution of gold chloride are used, the conclusion must be that the gold content is inaccurate. Actually, the previously mentioned permanganate titration of the gold is superfluous, because the gold content may easily be regulated so that the standard turbidity of approximately 130 is secured.

Finally, the turbidimetric method provides the best means for following, in a quantitative manner, the aging of citrate gold 1:10,000. Heretofore, an exact study of aging was impossible, mainly because of the great irregularity in the rate of change of the sol after a certain period of time. Although many factors that play a rôle in aging may be unknown at present, the satisfactory character of the sol may without difficulty be determined, so that the final results of the gold reaction remain reproducible with the highest degree of accuracy required. In the quantitative gold reaction, the effect of aging is reliably eliminated by restricting the use of a batch of citrate gold 1:10,000 to only 1 week. Even during this short time, the turbidity decreases, as from 130 to 100, with a corresponding decrease in the sensitivity. A decrease within a limited range does not affect the final result, since in the quantitative gold reaction the changes are quantitatively compensated by the use of the gold color standard, while in qualitative technics such slight differences could hardly be detected.

After a prolonged period of aging, either a sediment or precipitate of gold forms on the glass walls, indicating deterioration of the batch, or, less frequently, the gold sol, while remaining clear for a long time, exhibits a progressively decreasing turbidity.

Citrate gold 1:10,000 may occasionally be used considerably longer than 1 week, namely, as long as the test fluid yields the same curve as with freshly prepared gold sols, and the turbidity is not markedly lower than 90. It is unnecessary and unwise, however, to risk difficulty by using a citrate gold sol 1:10,000 more than 1 week old, and the maintenance of a fixed schedule of use, at least in the quantitative technic, is advisable.

SUMMARY AND CONCLUSIONS

Gold sols for use in the colloidal gold reaction prepared by reduction with sodium citrate have several advantages over the neutral formol gold, which, although effective, is difficult to prepare and is subject to unsatisfactory modifications. Gold sols of widely varying particle size may be obtained by reduction with sodium citrate. Further advantages are that the range of pH for effective reduction is broader, and the distilled water need not be as pure as was required by the formol method.

Gold sols obtained with a concentration of sodium citrate of 1:10,000 have a similar sensitivity, at pH 7.4 of the milieu, to that of formol gold. This is about the optimal sensitivity; gold sols prepared with higher concentrations of citrate, which are of an orange-red color, are unsatisfactory for purposes of the gold reaction.

Citrate gold 1:10,000 is definitely acid. The simplest way to neutralize this acidity in order to maintain the obligatory pH of the milieu, around 7.4, consists in the use of strong buffers as diluent, instead of saline.

The simple determination of the turbidity of citrate gold 1:10,000 with the photoelectric colorimeter provides an accurate and objective control of its reproducibility. The progress of aging may be similarly checked. By this method of control, identical gold

sols can be employed in different laboratories.

An amazingly simple qualitative test can be performed using citrate gold 1:10,000 in combination with buffers. The widespread vitiation of the results of the gold reaction, demonstrated by the appearance of false paretic curves in purulent meningitis, is easily eliminated in this way. The real value of this combination of standardized gold sol and buffers, however, will be appreciated only if the results are recorded quantitatively with the easily prepared gold color standard. The technic of this thoroughly controlled quantitative gold reaction actually offers less difficulty than the original qualitative technic or its many modifications suggested as technical modifications.

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Army Seeks Sanitary Corps Officers

According to an announcement of the U. S. Army, Office of the Surgeon General, Sanitary Corps officers have been placed in the scarce category. The Preventive Medicine Service of the Surgeon General's office is seeking qualified men to become commissioned officers and has announced the minimum requirements for enlisted personnel for appointment as second lieutenants. Applicants must have a bachelor's degree with an appropriate science major and a minimum of 2 years' experience in the particular field in which the applicant is qualified. In exceptional instances, bacteriologists, biochemists, serologists and parasitologists may be considered for a commission upon the completion of one year of Army laboratory experience.

Backflow Preventer Installations

IRVING REICHMAN

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THE definition of requirements for correct air gap and backflow preventer installation, as set forth in the new ASA standard,[1] has served to clarify some of the problems involved in this phase of water supply protection. Inspection of a large number of backflow preventer installations has disclosed certain difficulties, some of which result from departures from the provisions of the present standard. An analysis of such faulty installations indicates that in the majority of cases there was a lack of acquaintance with the principle and operation of these devices.

The purpose of the backflow preventer (also known as a vacuum breaker, siphon breaker, anti-siphon valve, etc.) is to prevent back-siphonage of polluted or spent water into the water supply system when negative pressure (vacuum) develops in the supply line. It does this by breaking the vacuum, that is, by admitting air when the water flow ceases or reverses, as occurs under negative pressure conditions. The disc, piston, float, flap, vane or other closing mechanism in the mechanical type backflow preventer should close the air port or inlet under positive water pressure and open it when this pressure is removed. In other words, when the water pressure drops to a point too low to keep the disc, etc., in the "closed" position, then the disc should drop of its own weight to the "open" position. However, if the outlet end of the backflow preventer is under appreciable head, then instead of opening the air port when the flow is stopped or reversed, the disc, because of the back pressure, may remain in the "closed" position or partly open, with the result that polluted water may flow or be drawn back into the supply system. This will not occur with all backflow preventers, the possibility generally depending on the particular design. In order that there may be no head on the outlet end it is essential that the backflow preventer be set above the level of the highest fixture outlet under supply line pressure. It must, of course, also be set above the highest fixture inlet and the fixture flood-level rim; requirements generally specified in the manufacturer's installation instructions. Back pressure may be caused not only by static head but also by pump discharge head. Supply lines equipped with backflow preventers should not be connected to pump discharge lines.

Paragraph 66 of the ASA standard prescribes the following limitations regarding the installation of backflow preventers:

"The backflow preventer shall be installed between the control valve and the fixture so it will not be subjected to water pressure, except the back pressure incidental to water flowing to the fixture.

"*Backflow preventers, as prescribed herein, shall never be installed on inlet side of control valve, as they should not be subjected to constant water supply pipe line pressure.*

"*Furthermore, all backflow preventers shall be correctly installed according to the instructions supplied by the manufacturers.*"

The first two of these requirements practically preclude the use of positive side (inlet or pressure side) backflow preventers. These particular preventers are designed for use under direct or constant supply line pressure, i.e., either without a control valve or on the positive or inlet side of a control valve, as the latter is defined in the standard. Although no specification or provision for such installations is contained in the present standard a large number of positive side backflow preventers have been and are being installed. Their use in New York City is at present authorized by the Board of Standards and Appeals, and their installation is accepted under plumbing code and water department regulations.

Because positive side backflow preventers have both the inlet and outlet threaded, and some will allow water to flow in either direction, there have been instances where the supply line was found connected to the outlet and the discharge line to the inlet. This mistake of setting the backflow preventer on a side or treating it like an ordinary elbow has been most common in the installation of the smaller sizes. It is essential that the preventer be installed upright, otherwise the closing mechanism will not be actuated by gravity.

A backflow preventer should be of ample size, at least that of the supply line to it, in order both that the air port area may be sufficient to afford full vacuum relief and to reduce pressure loss. Some backflow preventers cause an appreciable pressure loss and this reduction in water pressure may prove troublesome. Where the inlet pressure of an unprotected supply to a fixture, machine, apparatus, etc., is just sufficient for proper operation, the installation of a backflow preventer may result in an outlet or residual pressure lower than that required for satisfactory operation of the fixture, etc. This sometimes occurs with commercial and industrial installations in low pressure distribution areas, and is also quite frequently true of flush-valve type backflow preventer installations where the inlet pressure at the fixture is poor or barely sufficient to start with, as is often the case on the upper floors of a building wholly supplied through an up-feed system. (A down-feed system, although subject to static pressure conditions similar to those of an up-feed system, is ordinarily not subject to backsiphonage.) Given sufficient volume, the effectiveness of siphonic action flushing of a water closet, for example, depends chiefly upon the pressure at the fixture inlet. Where this pressure is too low it often becomes necessary to flush five or six or more times before cleansing results. In this regard, inspectional tests have shown many flush valve-backflow preventer installations which were acceptable from the sanitary standpoint in that the possibility of contamination through backflow was eliminated, but which were unsatisfactory from the conservation standpoint in that water waste was either introduced or became worse. On sanitary inspections calling for backflow elimination the author makes pressure tests to guide him in writing the correction specifications. Where the static or the estimated residual pressure is found to be insufficient for proper operation of flush valves a frequent recommendation is the replacement of the flush valves by anti-siphon flush tanks. Other tests and recommendations for backflow prevention are also made and these vary according to the particular conditions or circumstances.

Outdoor backflow preventer installations should, wherever possible, be avoided. Aside from the danger of freezing, the greater objection is the possibility of dust getting into and clogging the air ports. This would make the backflow preventer ineffective;

therefore, unless unavoidable, these devices should not be installed outside or in inside locations where they would be subjected to heavy dusts, particularly those of an industrial nature. However, where this is unavoidable, as with some outdoor water supplied structures, playgrounds, etc., then some form of dust hood such as a simple, inverted (open bottom) cylindrical can, about 1½ feet long, should be fitted over the backflow preventer, and the entire assembly examined periodically.

The author has seen backflow preventers correctly installed on jobs under construction, only to come back a week or two later to find that the pipe coverers had covered and completely sealed in the preventers as they often do check valves and other fittings. Hence the advisability of a final inspection. In at least one instance a Venturi-type backflow preventer was disconnected and removed because "it was entirely too noisy." Spurting (spitting) and leaky preventers are a nuisance. An obstructed or improperly seated disc will cause a continuous leak through the air inlet. Tamper—in a few cases air inlets were found plugged—has resulted from attempts by the inexperienced to stop such leaks.

A backflow preventer installed on the positive or inlet side of a control valve or fixture in continuous service is constantly under supply line pressure and quite a few positive side preventers have been found in which the disc or operating part was immovably frozen in the "closed" position. Backflow preventers in this condition are obviously useless for preventing backflow. Although a proper air gap is the best protection against backflow, the use of a check valve as an additional safeguard with positive side backflow preventers merits some consideration.

Regarding check valves it is frequently asked, "Isn't the ordinary check valve sufficient protection against backflow?" A good check valve in good working order and properly installed would, in general, prevent backflow. But check valves, unless they are examined regularly and often, are not to be relied on, especially after they have been in service some time. Checks which do not seat properly because of obstruction or defect are common. In a recent investigation of a water contamination hazard in a hospital comprising several units, the source of the trouble was traced to a defective swing check in one of the buildings. A check valve alone is not sufficient protection against backflow, but when installed on the outlet side of a backflow preventer the combination may be considered a more satisfactory, though not necessarily an absolute or permanent, protection.

Backflow preventers have been mistakenly used as pressure relief valves on water-cooled refrigerating unit installations.[2] Contrary to code, a number of spring-actuated vacuum breakers have been connected in water supply lines, but wherever found these are ordered removed. In New York City only those backflow preventers which are approved by the Board of Standards and Appeals are permitted, and thus far none but the gravity-actuated type of mechanical backflow preventer has been approved.

The steady improvement in backflow preventer design has helped to eliminate faults inherent in some of the earlier models. Other difficulties connected with the use of backflow preventers will also disappear as codes are clarified and coördinated and information on these devices is disseminated.

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SELSKAR MICHAEL GUNN

THE death of Selskar Gunn on August 2 has deprived the cause of public health of one of its wisest and most imaginative leaders.

He was born in London, May 25, 1883, of partly Irish ancestry which helped to color his vivid temperament. After coming to this country, he became one of "Sedgwick's boys" taking his bachelor's degree at M.I.T. in 1905 and, later, his C.P.H. at the Harvard-Technology School for Health Officers in 1917. He began his career as a bacteriologist (as did so many public health pioneers of his generation); served as Health Officer of Orange, N. J., in 1908–1910; and taught under Sedgwick at M.I.T. from 1910 to 1919, rising to the rank of Associate Professor. He held a post on the staff of the Massachusetts State Department of Public Health from 1914 to 1916.

Selskar Gunn rendered invaluable service to the American Public Health Association during the formative years of its transformation from a small group of health officers to a strong continental professional society. He was Secretary from 1912 to 1918; Managing Editor of this Journal from 1912 to 1914; and Editor from 1914 to 1918.

The first World War drew Gunn into the wider international fields of public health which were to command his major interest for more than twenty years. He served with the American Tuberculosis Commission in France (and as a Captain in the Red Cross) from 1917 to 1920; as Advisor to the Ministry of Health of Czechoslovakia from 1920 to 1922; and in the Paris office of the Rockefeller Foundation from 1922 to 1932. He was placed in charge of all the health work of this organization in the European area; and was made a Vice-President of the Foundation in 1927. His intimate knowledge of problems and personalities—with the prestige of the Foundation behind it—proved of incalculable value. The writer recalls one typical instance. The position of Stampar, the splendid health leader of Yugoslavia, was threatened by a political cabal. Gunn took the Orient Express and called on the King to say how pleased the Foundation was with the magnificent progress Yugoslavia was making under Stampar's guidance. That was all; but it was enough. Stampar's good work went on.

In 1937 Gunn was sent by the Foundation to China where he remained for

the better part of five years. The plan which he developed for a broad program of social welfare—in which the artificial boundaries between health and education and agriculture and economics were broken down—was perhaps the most significant achievement of his life. When the menace of Japanese imperialism is overthrown, this program will certainly be realized as a basis for the great emergent China of the future.

Since 1941 Gunn has been at home again, primarily engaged in the direction of a comprehensive study for the National Health Council of the functions of voluntary health agencies in the United States—a study which will shortly be completed by his associate, Philip S. Platt. In 1943, he served as the Secretary of the Committee appointed by Governor Lehman to organize the work of OFRRO, evolving plans which greatly facilitated the operations of its successor, UNRRA.

Selskar Gunn, among other honors, received decorations from the governments of Czechoslovakia, Denmark, France, Norway, Poland, and Yugoslavia. The fruits of his efforts in many parts of the world and the love of his friends meant more to him than any merely tangible rewards. His courage and loyalty, his wisdom and statesmanship, his driving conscience, his warm and eager and intensely human personality made him very dear to us. With him, we think always of the wife (Carroll McComas) whom he married in 1933 and who did so much during the past ten years to make his life happy and fruitful.

WHAT PRICE, THE SCHOOL HEALTH EXAMINATION?

THE routine machinery of the school health examination is now once more in active operation, throughout the country. It is one of the largest, and one of the most costly, enterprises in the field of community health. We may properly ask ourselves whether the machine in our home communities is geared to a reasonable maximum of efficiency, whether it is turning out the results which we have a right to demand. Justly or unjustly, the high incidence of various physical defects revealed by Selective Service examinations, will inevitably raise questions as to the success of past performances. Particularly at the present moment, the shortage of physicians for civilian service makes it imperative to use the time of precious professional personnel in the most efficient manner.

The underlying philosophy of the school health examination is sound. It envisages three procedures which are all eminently desirable:

A periodic medical examination of each child, sufficiently thorough to detect all important physical defects and deficiencies.

The actual use of this examination as a basis for the education of the child and its parents in regard to the application of the laws of health to that particular child; and for the adaptation of the school program, including physical environment, load of home work and physical exercise, to its individual needs.

The correction of those remediable defects which are discovered.

In some cities and even in some small rural communities this ideal is attained in reasonable degree. The family physician, the school physician, and the school nurse in such areas understand their job and coöperate effectively in its performance.

In other communities, the picture is a very different one. In a New York town the task of school inspection was, a few years ago, allotted in rotation to

three local doctors; one examined at a rate of 15 pupils per hour, another at the rate of 60 per hour. In another town the rate was 80 or 90 per hour. Perhaps a world's record was recorded in a recent survey of a Connecticut city—300 examinations made on each morning visit to a school. Where such a system prevails there can obviously be no real detection of defects, no education of the pupil, no hope of constructive service. As to the correction of defects discovered, it may be doubted whether more than a very few school systems have systems of medical bookkeeping of meaning and validity. Some have no records at all; some show 100 per cent correction year after year, with no reduction whatever in the number of defects found in the same children in successive years. The cost of school medical service in 18 New York communities varied from $.17 to $5.17 per child, and the most efficient services were by no means always in the highest cost ranges.[1]

The figures cited above are for extreme cases. Many schools have a health examination program which is sound and fruitful; but it is time that the laggards were brought up with the procession.

One important factor in promoting hasty and futile procedures is the existence of well-meaning but misguided state laws which require a routine physical examination to be made each year. No community is rich enough to provide a real examination on an annual basis; and if it were, such a procedure would be a needless waste of medical time. What we need is an examination (including heart and lungs) made in the presence of a parent and combined with specific instruction in personal hygiene which would require on the average at least 20 minutes. Examinations should be made before school entrance and, as a minimum, twice more during the period of school life and finally at the termination of school life; and always, of course, at any time on referral by nurse or teacher or after absence due to illness. A study made in Astoria, N. Y., showed that two to four times as many children with defects needing attention (other than those of dental and visual nature) were revealed by referral examinations as by routine examinations.

These physical examinations (either on referral or routine) need *not*, however, be all made by the school physician. Indeed every effort should be made to enlist the services of the family physician where family economic resources will permit. The chance of effective follow-up will be greatly enhanced in such families by this procedure. Full reports on standard forms should, however, be required for the school medical files.

Exactly the same principles should govern the treatment of defects. The family physician should provide such treatment (again reporting to the school service) if the family can pay the costs. If not, local clinic facilities should be utilized; and, only in so far as these are not available, the school medical service itself may be forced to step into the breach.

It is obvious, of course, that the medical examination is but one part of the total school health program, which must also include daily inspections and continuing classroom observation by the teacher, school nursing service, and home follow-up, coöperation of parents, availability of treatment facilities, and—above all—intimate integration into the total program of school health education and physical education.

Finally, if the school medical service is to operate successfully competent expert supervision is essential. Most school physicians are—and should be—part-time employees. Today, what they know about their task is—too often—that

the law calls for "an examination," and that they have the job of making "examinations" at so much a head. The payment on a capitation basis itself directly tends toward a high pupil-per-hour maximum. Part-time school physicians should be paid for their time, not on a capitation basis; and they should be supervised by a competent full-time local or county or state full-time school physician. The qualifications for such full-time school physicians have been outlined by the Committee on Professional Education [2] of the A.P.H.A.

The ideal set forth is not a Utopian dream. It is attained in certain favored areas; and it represents merely the adequate performance of our duty to the taxpayer who pays the cost and to the child who needs the services. The present service is in some communities the weakest link in the entire field of public health. Its improvement by the formulation of a definite program of reform is a clear challenge to our recently organized Section on School Health.

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FROM HEALTH HONOR ROLL TO NATIONAL REPORTING AREA

ANNOUNCEMENT, in the May issue of the JOURNAL,[3] of awards to 53 communities in the National Health Honor Roll marks the 15th year of a program designed to stimulate improvement in local public health work. This competition has been fostered throughout by the U. S. Chamber of Commerce and the American Public Health Association and financed by the Metropolitan and other life insurance companies. In 1934 it was expanded to rural areas with the additional support of the W. K. Kellogg Foundation. The Canadian Public Health Association extended the scope to Canada with both English and French forms in 1937. Since the first announcement, 682 communities have submitted approximately 2,100 schedules and 201 different communities have received 615 awards of one kind or another.

The program of the A.P.H.A. in this field has passed through three successive phases. Originally, it was an outgrowth of the earlier experiences of the Committee on Administrative Practice which from its inception in 1920 had been interested in the construction of a simple method of expressing the mass of descriptive and factual material gathered in community health surveys. This interest culminated in the well known *Appraisal Form*, which was published in its first edition in 1925. The *Evaluation Schedule*, produced in its first form in 1929, was a modification of the *Appraisal Form*, reduced in size and with somewhat different emphases in aims and structure.

It was Chapin's epoch-making study of state health departments in 1914 that was mainly instrumental in directing attention to the practical advantages of expressing the extensive details of health surveys in terms of simplified numerical scores or grades which would be combined into a single total score. This proposal of expressing public health activity and achievements in terms of numerical scores precipitated heated debate in the early meetings of the Committee on Administrative Practice. Well do we recall how Chapin, Frost, Rankin, Freeman, and others argued back and forth for long hours over the desirability of

this innovation. On the one side was the fear of scientific unsoundness in attempting to place weighted values on the separate measures and practices followed in a public health program. Opposed to this was the feeling that the promotion of public health required some means of ready visualization of degrees of achievement in order to create understanding and interest on the part of both public and professional groups.

The surveys of the hundred largest cities of the country by the U. S. Public Health Service and of the 86 next largest cities by the American Child Health Association prior to 1925 brought to the front the practical necessity of adopting a numerical scoring method to portray in understandable fashion the extensive data there accumulated. It was such mass surveys of many communities rather than the isolated studies of single areas, many of which were carried on during the period from 1910 to 1930, that gave the main impetus to the introduction of the scoring principle in evaluation and appraisal of health work.

The periodically revised *Appraisal Form,* which grew from 40 pages in 1925 to 180 pages in 1938, provided two main features. It was a device for recording data in a uniform manner and it included numerical values and weights of items established by the group judgment of a committee made up for the most part of practising health officers. It was so arranged that the person filling out the form could, at the same time, compute the score attained. The primary purpose of the original form was to enable the health officer to evaluate the strength and the weakness of the various sectors in his battle area. In this respect, the development of an objective appraisal technic was, not only a basic contribution to the cause of public health, but a unique example of scientific self-evaluation of a public service.

In 1929, with the opening of the Health Conservation Contest—later the National Health Honor Roll—the work of the Association entered its second phase—that of inter-community competition. The *Evaluation Schedule* introduced for this purpose did not provide for self-scoring. The scoring was done by a central committee. Furthermore the new form contained several new principles: A poor score in certain important items branded an entire area of action as poor. Good scores in minor items were not permitted to compensate or outbalance poor scores in more important ones. Furthermore, where the *Appraisal Form* placed main emphasis on health department effort such as "number of visits" and "number of inspections," the *Evaluation Schedule* focused on the resulting health protection of the community as a whole, recognizing contributions in effort from all sources—private practitioners, voluntary agencies, and others—as well as from the health department.

Although the *Evaluation Schedule* is still far from a polished instrument, there is evidence of a basic advance in philosophy. It attempts to measure first, problems or needs; second, available resources, and third, as objectively as possible, the degree of success in applying appropriate resources to those various needs. Since the first step obviously is to identify the problems, there is a section on problem definition. Emphasis is placed on viewing the community as a whole. The quality, availability, and cost of medical services and facilities are important factors about which exact knowledge must be at hand if specific action is to be taken. The accent is on measurement of results rather than mere activity, i.e., the percentage of pasteurization plants that meet certain standards, rather than the number of inspections of such plants.

The new *Grading Chart* recently prepared for each participant is a significant

development. A panorama of the public health program is presented on a single sheet. Three columns, "good," "fair," and "poor," in which check marks are placed, have superimposed a system of colors, blue, green, and red. Blue colors the "good" column and some "fair" items, green the "fair" column but many "poor" items, and red the remaining "poor" squares. Column positions measure the items when considered alone. The color indicates the relative importance of the items in grading the section. Grading is accomplished by color, not by points. This system does away with numerical values of "false and delusive accuracy" and prevents compensation of glaring defects by other good programs. Further refinement is desirable but the method promises many interesting applications in evaluation technic.

A notable feature of the evaluation program has been the issuance with the aid of the Commonwealth Fund in 1943 of an intriguing booklet entitled "Health Practice Indices." This contains 60 charts depicting how 134 communities stand, relatively, in public health results, achievements, and activities. This "mirror of public health practices" as it has been aptly called, gives a community an opportunity to compare its own achievements with a sampling of practices over the country. This pictorial background of practice will figure prominently in the new program for the development of a permanent nation-wide reporting area.

The demonstrable contributions of the evaluation process to public health have already been worth many times the time and money invested. The *Evaluation Schedule* and its companion pieces, the *Grading Chart* and *The Indices*, are important today as never before. These tools can be, and frequently have been, used effectively:

1. By *local* health departments as an appraisal of the total community; as a basis for annual reports; as an outline for coöperative programs with related groups; as an index of budgetary needs for new services or equipment.

2. By *local* community groups such as Chambers of Commerce, labor organizations, industries, and others interested in developing more adequate services and facilities. It is particularly well adapted for analysis of war-expanded localities where community facilities such as housing, hospitals, etc., have belatedly been found to be as important as the size of the pay check and good working conditions inside the factory.

3. By *local* groups interested in developing sound post-war plans for new facilities of a community nature, either with local resources or with federal coöperation.

4. By *state* health departments in evaluating problems and programs in city, county, and district units on a comparable basis; in determining budget allocations, relative efficiency of personnel, or the need for supplementary services by the state health department; as a pattern for annual reports, etc.

5. By *national* agencies such as the Chamber of Commerce, labor unions, manufacturers' associations, hospitals, medical associations, U.S.P.H.S., A.P.H.A., etc., for representative cross-sections of the nation's problems and practices.

6. By the *A.P.H.A.* for the preparation of "indices" of current practice for the guidance of its officers, committees, and members, and as a basis for consultative services, program planning, etc., at local, state, and national levels.

7. By *universities* and schools of public health in teaching public health administration; in making useful studies of current practice as a service to local and state units; in developing the analytical sense of students in the true measurement of progress in problem solving and an understanding of truly balanced programs in the light of the needs of the people served.

This broad program for the development of progressively higher standards of public health service is now entering on its third phase. As indicated by its action in December, 1943, the Committee on Administrative Practice has decided to terminate the National Health Honor Roll and the granting of awards to high-

scoring communities. The annual submission of evaluation schedules will continue, but, in place of the awards feature, efforts will be centered on the development of a national reporting area for health practices.

The change from *contest* to *honor roll* a few years ago was in itself a real step forward. The competitive factor began to lose its usefulness as soon as the leaders in each class were definitely established. The honor roll substituted a standard of achievement which any community could attain with a good enough performance. This suggests still another evolution. A nation-wide reporting area (similar to the birth registration area) might be developed by having communities report regularly on a standard form based on the problem-solving philosophy of the present *Evaluation Schedule*. The value of the *Indices* alone would repay the communities for the effort entailed. Such a scheme might eventually prove of value to the U. S. Public Health Service as a means of obtaining a real picture of problems, resources, and accomplishments throughout the country. It certainly would represent a better measure of overall community health protection than reports of "number of services rendered" now customarily requested.

The experience with the Honor Roll in rural areas suggests a usefulness which has only been realized in a few states. In 1943 there were 48 returns from Michigan, 18 from Texas, 17 from Louisiana, 11 from Kansas, and 11 from Oklahoma. Where comparative data of this sort are available, the schedule can provide state directors of local health services with comparable local data based on problems and accomplishment rather than volume of work; and thus enable them to appraise the strong and the weak points in their local health services.

The development on a stabilized and permanent basis of a national reporting area for health practices is a logical and inevitable outcome of this well tried experience in health evaluation. In spite of occasional errors of judgment in the selection of outstanding communities, the fruits of this long pioneering effort have been eminently satisfactory. The practice of annual stocktaking is sound and necessary in reviewing the past and in planning for the future. The visualization of achievements and the opportunity to compare individual results with the general range of practice is a natural and strong stimulus to self-advancement. Such an undertaking merits the hearty support of federal, state, and local agencies in the attainment of its goal.

Not only the American Public Health Association but the cause of public health throughout the world owes a very real debt to the Metropolitan Life Insurance Company, to the W. K. Kellogg Foundation, to the Commonwealth Fund, and to the other agencies which have so generously supported the work of the Committee on Administrative Practice for a quarter-of-a-century. The significant program of Sanitary Indices prepared by the Health Section of the League of Nations was a modification of our American appraisal for international use. It is highly important that the latest and most important phase of our Association's work—the development of a National Reporting Area for Health Practice—shall be brought into full effect. Some way must be found to continue this work with whatever reorganization seems appropriate and with new sponsors if need be. The achievements of the A.P.H.A. in the self-evaluation and improvement of the practices of the public health profession are too vital not to be carried forward.

REFERENCE

1. *A.J.P.H.*, 34, 5:557 (May), 1944.

Credit Lines

"THE PECKHAM EXPERIMENT, A STUDY IN THE LIVING STRUCTURE OF SOCIETY"

At the request of the Managing Editor, George Baehr, M.D., Director of Clinical Research, Mt. Sinai Hospital, New York City, has prepared a review of a most interesting report under the above title by Innes H. Pearse, M.C., and Lucy H. Crocker, B.Sc., recounting an adventure in health center work in London. Very few copies of the report have reached the United States, and Dr. Baehr has been asked to summarize the outstanding features, since he has retained an interest in the project for several years and has familiarized himself with its outworking. His review follows:

This is the third published report on the pioneer health center in London, which was established in 1926 under the leadership of Dr. G. Scott Williamson and Dr. Innes Pearse. The first preliminary report was published under the title, "The Case for Action." The second, which appeared a few years ago, shortly after occupancy of a new building in the Peckham area of London, is called, "Biologists in Search of Material." A fourth publication is promised in the near future.

This health center to provide preventive medical service to families was located in the Borough of Peckham, in South London, an area inhabited by people belonging to various economic levels, from the poor groups to the middle class, and representing various types of employment. The pioneer quarters which were established in 1926 were soon outgrown, and 7 years later a new building of steel and glass was erected which provided a club-like atmosphere and at the same time served as a consultation center to which families living in the district rallied for social as well as health reasons. The new structure was in operation for about 4½ years when the war terminated its activities in 1939.

For the small weekly payment of a shilling by the family unit, the children were entitled to participate in all sport and recreational activities without charge; the adults paid small fees of sixpence or less only for certain of the recreational activities in which they joined.

The new building was adequate for 2,000 families. If this total membership had been reached, the family memberships and the small fees for the use of recreational activities by the adult members of the families would have defrayed the entire maintenance cost of the project. Almost 1,500 families had joined by the time the building had to be closed because of the war.

The health overhaul initiated the family's relationship to the Center. Once they had joined, the families were given complete freedom to use all the health and recreational facilities of the Center without much direction from the small nucleus of full-time members of the staff of the Center. The family health overhaul revealed that a surprising number of people required medical as well as social advice and guidance throughout the period of their membership. Members were classified from a health standpoint into three general groups. The first group included those who had actual disease—meaning *dis-ease* in the literal sense of the term—people who knew that they had physical disabilities and subjective

complaints. They were found to constitute, roughly, about 32 per cent of all members. Another 59 per cent were in a state of well-being—in other words, they had no *dis-ease*—but their physical examination disclosed disorders—some of them important disorders—of which they were entirely unconscious. Only 9 or 10 per cent were classified as absolutely healthy people in whom no physical disturbances could be found. As a result of membership in the Health Center over the years, these percentages were materially improved by correction of the disabilities and by improvement of living standards.

The significance of the Peckham Experiment is greater than that of any other form of preventive medicine which has thus far been attempted experimentally, because it was designed to guide families and helped them to guide one another in all medical, social, and environmental relationships which have an important bearing upon disease. New member families came under the influence of the member families who had been using this health service for some time. As a family increased in size, professional advice and guidance were available as preparation for pregnancy as well as during the prenatal and postpartum periods. Pre-marital consultations were available and were freely used. The children, themselves, brought problems of their own into the Health Center, for which they sought guidance. At the Center, they found quiet space in which to do their homework after school, as well as facilities of all kinds in which to indulge their physical activities. Above all, they found people at the Center who were able to guide and advise them in a sympathetic manner. The adolescents, with their special problems, also found the advice and help which they needed. Those who were of the age when courtship and mating are of special interest found this counsel particularly valuable. Even problems of social poverty were influenced by personal associations made between member families. The members developed an interest in one another. They influenced one another in their cultural development. Many developed a new breadth of vision in living. All these factors had an influence upon the diseases to which they were exposed.

A list of the welfare, educational, and health activities of the Center is impressive. It includes an antenatal clinic, postnatal clinic, birth control clinic, infant welfare clinic, care of the toddler, nursery school, immunization center, medical inspection of the school child, vocational guidance, sex instruction of adolescents, boys' and girls' clubs, sports clubs, and recreational clubs of all kinds. A country branch was established to which some of the family members could be sent during the summer, and to which members could be referred for convalescence after hospitalization or even after illnesses in the home. The building also provided keep-fit and gymnasium classes, adult cultural education, music, debates, drama classes and lectures of all kinds, citizens' advice bureau, holiday outings and expeditions, even a public billiard hall, and place for social gatherings.

Among the therapeutic activities were the marriage advice bureau, mothers' clinic, child guidance clinics, school care committee work, poor man's lawyer, hospital almony, which corresponds to our hospitals' social service, hospital follow-up, including all forms of after-care in their home or convalescent place for members discharged from medical care, and, finally, even a rehabilitation clinic. No actual medical therapy was practised, but members were brought into relationship with the proper agencies responsible for the technical part of rehabilitation or other services.

The Peckham Experiment has dem-

onstrated that families of a mixed economic group will gather together if proper facilities are provided, that they will get the idea of health through proper living, and will coöperate and stick to it over the years. Almost equally important is the demonstration that such a project can be self-supporting when adequate membership has been reached and the facilities of the institution are completely utilized. Although the project was a combination of a family club and a health service, the founders prefer to think of it as a biologists' laboratory designed for the prevention of disease through healthful living and for mutual aid in the amelioration of social poverty. Re-establishment of the enterprise is promised after the war.

PROMOTING HOME SAFETY IN NASSAU COUNTY, N. Y.

The Association's Committee on Administrative Practice has a Subcommittee on Accident Prevention which is paying special attention, under the Chairmanship of Donald B. Armstrong, M.D., 2nd Vice President, Metropolitan Life Insurance Company, New York, to the prevention of home and farm accidents. Through the work of this subcommiteee, the following report is presented on Home Safety Activities of the Nassau County Health Department, N. Y.:

An effective home safety program is being conducted in Nassau County, Long Island, under the auspices of the Commissioner of the Health Department, Dr. Earle G. Brown. Nassau County, containing a number of medium urban communities and rural areas, affords an excellent proving ground for home accident prevention activities. A sectionalized view of the county shows that it consists of two cities, 63 incorporated villages, and 3 townships, with a population exceeding 450,000. The county has its full share of public spirited individuals, many of whom are working on home safety through such organizations as the Red Cross, Nursing Council, Home and Farm Bureau, Child Care Committee, Boy and Girl Scouts, Parent Teacher Associations, and public utility companies.

It is apparent throughout the United States that home accidents are on the increase and Nassau County in the past year has proved no exception. With this in mind, as well as because of the war depleted availability of doctors and nurses, Dr. Brown instituted the Nassau County Home Safety Program which had its inception at the first Home Safety Conference last December. The program was carefully planned to stimulate the interest in home safety of the representatives of approximately fifty community organizations who attended the conference. From the reports of home safety work and the lively discussions conducted at intermittent intervals, it is not surprising that activities unfolded in a succession of stimulating events throughout the following months.

A number of organizations, young in the field of community life, such as the American Women's Voluntary Services and the American Women's Hospital Reserve Corps, at once made plans to incorporate home safety in their programs. Other organizations, such as the Nassau County Woman's Bar Association, gave generous space for a home safety exhibit at their first Woman's Annual Forum. Charts were displayed and literature dispensed at this Forum. The County Federation of Women's Clubs gave time on their program at their Annual Joint Meeting of all the Associated Clubs of Nassau County. An address was given by Dr. Brown, who urged continued action on the part of each member to carry on with home accident prevention work both individually and collectively. Sev-

eral organizations, such as the Police and Fire Departments, the Red Cross, and the Parent Teachers Association, have carried safety programs in their regular curricula for many years, and with an incentive born of Dr. Brown's planning, a new dynamic has been felt throughout all these safety activities. Naturally, these more seasoned organizations received great encouragement from the early winter's Home Safety Conference and with fresh wind in their sails increased both the volume and quality of their speaking, teaching, and poster contest programs, all of which will contribute, undoubtedly, to the decrease in accidents in the homes of Nassau County.

The nursing groups, in particular, show promise of developing into a vanguard of home safety work in the county. They are, of course, in an advantageous position to convey safe home practices wherever the nurses visit. The nurses are showing enthusiasm and diplomacy in their daily work, the technics of which they absorbed in their round table discussions on home safety.

A MINNESOTA INSTITUTE IN HEALTH EDUCATION FOR SCHOOL ADMINISTRATORS

Dr. George M. Wheatley, Secretary of the School Health Section, contributes the following review for Credit Lines:

It has been our good fortune to see a 78 page. mimeographed publication from the Center for Continuation Study at the University of Minnesota, called "Health Education." It describes the Institute in Health Education for School Administrators, held at the Center for Continuation Study, January 6, 7, 8, 1944, under the direction of Ruth E. Grout, Associate Professor of Preventive Medicine and Public Health and Education at the University of Minnesota. It will be of interest particularly to health educators and others who are planning workshop sessions on health education. The program for each of the three days is given. The Faculty are listed, and it includes such people as Donald A. Dukelow, Director of Public Health Education, Minnesota State Department of Health; Ruth B. Freeman, Associate Professor of Preventive Medicine and Public Health, the University of Minnesota; Orin B. Graff, Superintendent of Education, University of Tennessee; William A. O'Brien, Professor of Preventive Medicine and Public Health, and Director, Postgraduate Medical Education, University of Minnesota; Dean M. Schweickhard, Commissioner of Education, State of Minnesota; and Clair E. Turner of Cambridge, Mass., and the Office of Inter-American Affairs.

The approximately 75 registrants consisted mainly of superintendents of schools throughout the state, and directors of health and physical education. The talks given by the faculty members of the Institute are reproduced in this publication, and many of them are distinct contributions. For example, Dr. Dukelow's talk on "Making the Health Examination Effective," and the "Educational Aspects of the Health Examination," by Helen M. Starr, Associate Professor of Physical Education for Women at the University of Minnesota, ought to be read by everyone in school health work.

A symposium of special interest which is reproduced, is on the theme, "What Teachers Are Doing in Health Education." This series of talks by (a) an elementary teacher, (b) a physical education teacher, (c) a science teacher, (d) a home economics teacher, (e) a nurse, give those of us who are not familiar with the inside of a public school at the present time a stimulating picture of the potentialities in health education in the classroom. One of the best statements we have read on the

relationship of the school administrator to the school community program is Clair Turner's talk to the members of the Institute on the final day. The informality of his remarks lent color and effectiveness to the idea, and it is well worth writing to the University of Minnesota Press to get a copy of this publication simply to read Dr. Turner's statement. We are told that copies of this publication will sell for 75¢, and can be ordered from the University of Minnesota Press, Minneapolis, Minn.

TRAINING OF TEACHERS BY THE WORKSHOP METHOD

"I want to be identified with the School Health Section," wrote Jean V. Latimer, Coördinator of Health Education for the Massachusetts Department of Public Health, recently, "because the school health program is just now at a cross-road and there are many important things for us to do." She went on, "I think that the School Health Section could help to guide health officers in coming to see that whatever services health departments give to teachers should be in accord with progressive methods of education. Just recently I have seen some teacher training material which was sponsored by one of our more prominent state departments of public health in the West, which was developed on a didactic, old-fashioned type of teaching—a plan which we hope does not spread to other states. I am convinced from actual experience that our in-service training of teachers should be on a workshop basis, rather than on the formal lecture plan. Possibly we need to define and discuss with public health people what we mean by functional health teaching, both for teachers and for pupils. Certainly we need closer relationship between public health and the school administrative group."

Through an interesting coincidence, almost in the same mail came the schedule of summer county workshop conferences for teachers in Kentucky arranged by Reba F. Harris, Associate Director of the Bureau of Public Health Education of the State Department of Health. Seven consultants from the State Department of Health were placed on schedule by Dr. P. E. Blackerby, Commissioner, to work with the workshops. Each was equipped to render a special type of consultant service on such things as communicable disease education, sanitation, tuberculosis prevention, malaria education, eye health problems, and vision and hearing testing. A glance at Miss Harris's outline with its generous use of motion pictures, field trips, demonstrations, chest x-raying of school teachers, and other things would indicate that the two weeks' workshop in each county was a lively affair. The whole plan is an example of the "functional health teaching" which Miss Latimer would employ with both pupils and teachers.

INDIANA WORKSHOP IN SCHOOL AND COMMUNITY HEALTH EDUCATION

The Indiana State Board of Health and Indiana University recently sponsored a Workshop for a period of two weeks at Bloomington under the direction of Willard Walter Patty, Professor of Education and Director of the Physical Welfare Training Department, and Frank S. Stafford, Director of the Division of Health and Physical Education of the State Board of Health and State Director of Physical Fitness for the Defense Council. Those interested in organizing similar Workshops will find it profitable to request outlines of the plans made for this Workshop by addressing Dr. Stafford at the State Department of Health, Indianapolis.

WE APOLOGIZE TO THE AMERICAN DENTAL ASSOCIATION

In August Credit Lines, there appeared an article entitled "How to

Find What Health Education Materials You're Looking For." Through a regrettable oversight the American Dental Association was not included in a list of national sources. Probably we figured subconsciously that everyone knew of the excellent dental health educational literature, movies, charts, posters, and exhibits produced and distributed by the A. D. A. Anyway, we are sorry. Next time we, and our guest editor, will keep our conscious minds on the job. For the record, the address is 222 East Superior St., Chicago 11, Ill., and the Director of the Bureau of Public Relations is Lon W. Morrey, D.D.S.

WORTH ACQUIRING

All the issues of the semi-monthly tabloid *Here's To Your Health*, published by the Fort Greene Industrial Health Committee, 295 Flatbush Ave. Ext., Brooklyn 1, N. Y. This committee is a unit of the Fort Greene District Health Committee of Neighborhood Health Development, Inc., and of the latter, Kenneth D. Widdemer is Secretary. *Here's To Your Health* is sub-titled "What You Don't Know *Can* Hurt You," and it is dedicated to telling industrial workers the simple, practical, elementary things they should know about nutrition, tuberculosis, venereal diseases, the health of mothers and babies, how to take care of a cold, how to avoid accidents on the job, and much more. It began publication on March 1, 1944, and each issue is better than the last. The September 1 issue is devoted to alcohol, although the writers would never say so. They would say it's about drinking, and their readers would understand them.

"Keeping Well," Volume 5 of the radio drama series as broadcast by the Baltimore City Health Department and the Medical and Chirurgical Faculty of Maryland. These dramas deal with the common communicable diseases, including tuberculosis and syphilis, with industrial hygiene, occupational diseases, maternity and child hygiene, mental hygiene, food poisoning, the prevention of accidents, and the history of health broadcasting.

The *Bulletin* of the Research Council on Problems of Alcohol for March, 1944. It summarizes the development of this organization, a constituent society of the American Association for the Advancement of Science. It throws light on the newer developments for the control of alcoholism. Address the Council at 16 East 42nd St., New York.

"There Is Hope for the Alcoholic," Broadcast No. 17, available from the Welfare Council of New York City, 44 East 23rd St. It features Alcoholics Anonymous.

"How to Make a Speech and Enjoy It," by Helen Partridge, illustrated by Mary Stevens, and published by the National Publicity Council, 130 East 22nd, New York 10, N. Y. Price $0.75. The pictures alone are worth the price of admission. The text contains many useful pointers not only for the inexperienced, but for those who are at ease on the platform, from long practice, but who always bore their audiences.

"Planned Health Film Production," by Adolf Nichtenhauser, M.D., Section of Medical and Health Films, American Film Center, 45 Rockefeller Center, New York, N. Y., reprinted from the *Journal of Health and Physical Education* for May, 1944. A discussion of the inadequacy of health films and the organization and financing of planned production.

BOOKS AND REPORTS

All reviews are prepared on invitation. Unsolicited reviews cannot be accepted.

The **Principles and Practice of Tropical Medicine**—*By L. Everard Napier, C.I.E., F.R.C.P. Calcutta: Thacker, Spink and Co.*, 1943, 522 pp.

This is the first and larger part of a textbook on tropical medicine by the Director and Professor of Tropical Medicine of the Calcutta School of Tropical Medicine who is now Visiting Professor of Tropical Medicine at Tulane University. He undertook the work because, at the time of preparation, there was no recent edition of a textbook in this field in the English language, and because of the demand for it by medical officers in India from Great Britain and the United States who required instruction to meet the demands in connection with the war.

The book is based upon the author's experience in India over a period of twenty years. It begins with a consideration of tropical environment and its relation to diseases, and measures to be taken by natives of temperate climates who take up residence in tropical countries. This is followed by a consideration of diseases due to the direct effects of tropical climate including heat stroke, heat exhaustion, heat cramp, the effects of ultra-violet sun rays, tropical anemia, etc. The bulk of the volume is devoted to malaria, leishmaniasis, trypanosomiasis, relapsing fever, rat bite fever, leptospirosis, the rickettsial diseases, Bartonellosis, yellow fever, Rift Valley fever, dengue and sand fly fevers, plague, tularemia, brucellosis, melioidosis, the intestinal fluxes, and leprosy.

With most of these diseases the author has had personal experience, and his presentations are excellent. He has devoted a large proportion of space to these diseases, and justifiably defends this in his preface by expressing the point of view that an author should give the detailed results of his own experience. The sections on malaria, leishmaniasis, plague, and the intestinal fluxes are particularly good from this point of view. A few of the diseases with which the author has not had personal experience, and which do not occur in India, are less completely presented, and perhaps less accurately. In the case of yellow fever, for instance, a map indicates that urban yellow fever is still endemic in parts of Central and South America from which it has been eliminated.

The work is presented primarily from the practitioner's point of view, and includes many important details of clinical diagnosis, but does not pretend to be a laboratory manual. Most of the illustrations, particularly maps, temperature charts, life cycles, and clinical photographs, are excellent. The colored plate illustrating intestinal parasites and arthropods, however, could be improved with considerable advantage. The author states that the completion of the work was prevented by his departure for the United States, but that much of the second part is in an advanced stage of preparation. This will include chapters on yaws, tropical ulcerative conditions, helminthic infections, dietary diseases, anemias, and snake bites. The index to the work has been postponed also, but the table of contents at the head of each chapter contains considerable detail.

The reviewer considers this an important contribution to the teaching and

reference literature on tropical diseases. It should be in the hands of all instructors in this field as well as libraries, military units of the armed forces, and many students of tropical disease. It is to be hoped that an American edition of the complete work with necessary revisions can be published in the near future so that it will be more easily available to American readers.

HENRY E. MELENEY

Industrial Ophthalmology — *By Hedwig S. Kuhn, M.D. St. Louis: Mosby,* 1944. 293 pp., 112 illus. Price, $6.50.

This pioneer textbook has a unique place in that it appeals to two classes—the management group and industrial medicine—groups that in the past have been too widely divergent for the common good. It is to be hoped that these writings will correlate their efforts more closely.

The first three chapters are devoted to a very skillful presentation of the visual problems in industry, such as job analysis and the qualities of vision required for each job, technics for mass visual examinations, how visual defects among employees can be corrected, etc. These details are well illustrated, mainly by photographs, the majority of which are completely pertinent to the subject.

The fourth chapter comes from the expert pen of Dr. A. C. Snell and deals with industrial eye injuries. This is too technical for lay management to comprehend and a bit too elementary for the industrial ophthalmologist, but presents the matter clearly for the non-specialized industrial surgeon. Certain highly technical details of a specialized surgical nature could well have been omitted, but on the whole the chapter is well worth while.

Chapter V on Eye Protection is one of the most important parts of the book, emphasizing prevention of blindness from industrial accident. The chapter is well written, well illustrated, and should be taken to heart by the management group as well as by the insurance group, interested in lowering the costs of compensation for eye accidents.

The final part of the book is given over to some of the newer aspects of industrial ophthalmology, flash-welding damage, shipyard conjunctivitis, etc. By and large, the book is very worth while and will bear close study by anyone even remotely connected with industrial ophthalmology.

HARRY S. GRADLE

Rose's Foundations of Nutrition —*By Mary Swartz Rose. Revised by Grace Macleod, Ph.D., and Clara Mae Taylor, Ph.D. (4th ed. rev.) New York: Macmillan,* 1944. 594 pp. Price, $3.75.

So far as this reviewer is able to judge, this newly revised edition of Mary Swartz Rose's famous text is not greatly different from the previous one. The table of contents is essentially the same. Some slight rearrangement in the order of the treatment of topics is noted. The number of tables found in the appendix is greater, thus making the new edition more serviceable to many readers. One now finds tables dealing with such topics as market lists for moderate cost, low cost, and liberal meals, tips on buying and using food, vitamin equivalents, and the recommended dietary allowances of the National Research Council. The frontispiece of the former edition was a picture of Lavoisier; in the new edition one finds a good reproduction in color of a portrait of Dr. Rose, a fitting addition to the first revision of her book to be made by others after her death.

The format is slightly different, the new page being a bit larger. Certain sections of the former edition that were somewhat difficult to read now appear in larger type. Evidently this

matter of legibility was given careful attention because one finds also that many of the illustrations of the former edition are now printed in a manner much easier to read and appreciate. The larger page made it possible to keep the total compass of the book within 600 pages. One can offer further interesting evidence that the new edition was completely reset in type in the fact that on page 237 appears a passage identical with one in the previous edition except that in this paragraph this reviewer's name is now misspelled.

This 4th edition certainly maintains the high standard of excellence set by the previous editions, and is a volume worthy of a place on the shelf of everyone interested in the science of nutrition. GEORGE R. COWGILL

The History of Miners' Diseases—*By George Rosen, M.D. New York: Schuman's,* 1943, 490 pp., illus. Price, $8.50.

This book presents a comprehensive research into a varied literature extending from Egyptian manuscripts to medical literature of the late 19th century.

The bibliography is voluminous and should be most valuable to students in industrial medicine and sociology. From a medical standpoint, the book covers a tremendous field in the long, and at times controversial, study of the pulmonary diseases of miners, and a criticism may be offered that there is frequent repetition, possibly due to the fact that the author's studies have covered the literature of France, Belgium, Scotland, and England. Much of interest in this book comes from its portrayal of the ages long social struggle of this important industrial group, as well as of other industrial workers.

Dr. Rosen has performed a monumental task and it is to be sincerely hoped that he will later present a second work covering the great developments of the 20th century from not only the social and medical, but also from an engineering standpoint.

LLOYD NOLAND

Medical Care of the Discharged Hospital Patient—*By Frode Jensen, M.D., H. G. Weiskotten, M.D., and Margaret A. Thomas, M.A. New York: Commonwealth Fund,* 1944. 94 pp. Price, $1.00.

This small volume is recommended as required reading for public health workers concerned with preventive medicine. It represents a one year experiment in extending extramural medical care to 902 patients discharged from the medical wards of the University Hospital in Syracuse, N. Y., of whom 165 patients were given home medical care by a full-time extramural resident. The experiment which was financed by the Josiah Macy Jr. Foundation was undertaken as a result of a teaching experiment introduced into the curriculum of the Syracuse University College of Medicine in 1930. Certain faculty members felt that medical education was laying too much stress upon disease rather than upon the patient suffering from disease. The responsibility was, therefore, placed upon each student of making a complete study of at least one patient, including a personal investigation of the home and the living and working conditions of the patient, and of the hereditary, environmental, social and economic factors which might play a significant part in the patient's illness or recovery.

The participants soon realized how unsatisfactory was the medical care available to most ward patients after discharge from the hospital. Approximately 85 per cent of the ward patients suffered from chronic diseases, and 90 per cent of the cost of hospitalization of patients on the general hospital wards was expended for such chronic illnesses. The extramural resident, who was also a member of the indoor medical

staff, knew all the patients before discharge, and as he was to take care of them in the home, the duration of many patients' stay in the hospital could be materially shortened. As was to be expected, many of the patients who received intelligent extramural medical care no longer found it necessary to return to the hospital repeatedly after discharge. When subsequent hospitalization was essential, they returned to the same hospital and remained for a much shorter period than patients hospitalized for the second time in another institution. One of the greatest savings was in the decreased need for re-hospitalization of patients with chronic cardiovascular diseases, who were responsible for approximately one-fifth of the total cost of hospitalization during the period of the experiment. The extramural resident took complete care of the 165 patients who had no physicians, but he also followed up patients discharged to the care of family physicians, the outpatient clinic and those who were transferred to other institutions. His influence in the homes of patients in disease prevention was perhaps the most important contribution of the experiment.

GEORGE BAEHR

Healthful Living for Nurses—*By Harold S. Diehl, M.D., and Ruth E. Boynton, M.D. New York: McGraw-Hill,* 1944. 534 pp. Price, $2.50.

In *Healthful Living for Nurses,* the authors have presented not only a textbook but a reference handbook. Each of the 23 chapters is a brief text in itself presenting a wide range of topics of interest, beginning with "Safeguarding the Health of Nurses" and ending with "Community Health." One may be misled by the title "Healthful Living," for much of the book is given over to the discussion of disease. However, in each case preventive measures are suggested which if followed contribute to healthful living, and Chapter X considers specific disease prevention.

In the first section of the book, the authors frequently refer to the nurse in the hospital and consider problems found in the institution. Keep on reading—for the nurse *not* in the institution will find the field broadens and principles that can well be carried over to the home, industry, or community organization are presented.

Each chapter presents the subject by a general overall review in digest form. No one school of thought is stressed but, with careful consideration, the East, West, North, and South—the scientist, philosopher, novelist, poet, and the authors contribute their thinking on the topic. The material is written in an interesting style.

After reading the book, you may wonder what the authors feel about certain controversial questions—the use of stimulants, the effect of smoking, or alcoholic beverages. The reader is allowed to consider various phases of the problem by the presentation of diverse points of view and by suggestions for other reference reading so that the answer to the question, "what will be my attitude toward .....?" is the reader's and not the authors'.

In addition, the student, the instructor, the group leader, will be grateful for the "Discussion Suggestions" and the "Reference and Reading Suggestions," found at the end of each chapter. Visual aids such as tables, charts, and diagrams are generously included all through the book as well as in greater detail in the appendices.

In the preface the authors modestly state that the subject matter has been brought up to date and made "applicable to the health problems and responsibilities of nurses." It might well be called the "What's What" in reference material for health orientation courses.

CAROLINE E. FALLS

Small Community Hospitals—*By Henry J. Southmayd and Geddes Smith. New York: Commonwealth Fund,* 1944. 182 pp. Price, $2.00.

In a very readable manner this volume discusses hospital procedures and standards which are of direct interest to administrators, staff, board members and organizations working in coöperation with hospitals. While the material covered applies directly to the small community hospital, certain chapters of the book (particularly "Organization and Administration") are applicable to large institutions as well.

The rural hospital is discussed in terms of the experiences of a group of fourteen hospitals scattered from Maine to Utah which have been built under the Commonwealth Fund program. The book, written in non-technical language, takes up the contributions of the board of directors, the medical staff, and the superintendent and her staff. Each chapter attempts to treat the subject in hand from an objective point of view, dealing impartially with both professional and lay personnel. While it stresses the functional side, a chapter on building design, illustrated with diagrammatic plans, has been included.

In addition to the seven chapters, an Appendix has been included, listing, in addition to much valuable information, the fourteen hospitals built under the Commonwealth Fund program.

Any criticism which may be offered of the book would be only favorable. The volume is small, but contains a wealth of material. There is need for just such a book. J. ROY HEGE

The Problem of Changing Food Habits—*Report of the Committee on Food Habits. Bulletin 108. Washington: National Research Council,* 1943. 177 pp. Free to Professionals and Agencies.

The Committee on Food Habits, largely made up of scientists from the fields of psychology, anthropology, and sociology, assumed the responsibility for this report "upon the methods of controlling the cultural forces which cause food habits to change."

In the preface, M. L. Wilson, Chief, Nutrition and Food Conservation Branch, War Food Administration, Office of Distribution, congratulates Dr. Carl E. Guthe, Chairman, and Dr. Margaret Mead, Executive Secretary, for the work of their committee. He says that "a new science of food habits is developing. This will be a handmaid to, and of equal importance with, the biochemical science of nutrition in efforts for the prevention of disease and facilitating man's progress toward optimum health."

The content covers a large amount of subject matter and is divided into four parts. The introductory chapters on the history of the committee by the Chairman, and the problem of changing food habits by the Executive Secretary are included in Part I. In Part II are reports on "Demonstration and Research conducted under Committee auspices." In Part III "Related Research" is reported, and in Part IV "Summaries of Committee conferences" are recorded.

A bewildering aggregate of information has been made available to the reader. It might perhaps have been arranged in a more logical fashion.

GERTRUDE GATES MUDGE

The War and Mental Health in England—*By James M. Mackintosh, M.D. New York: The Commonwealth Fund,* 1944. 91 pp. Price, $.85.

This little book of essays is presented in very scholarly fashion by one of England's most distinguished authorities in the field of public health. Dr. Mackintosh has long been identified with the mental hygiene movement.

The first part deals with the impact

of war and carries the reader through the processes of adjustment on the part of the English people during the years 1939 and 1940. The fortitude evidenced by the entire population during the lonely years of 1940 and 1941 develops in the reader nothing but admiration for the way the English people have met adversity and prepared for the defense of their liberties.

Part two, "Mobilization for Peace," deals with post-war planning. Two statements present a challenge. "An interesting and hopeful development which has arisen indirectly out of the emergency hospital service is a growing emphasis on the mental health aspect of general hospital treatment." This is undoubtedly one of the greatest defects in the general hospital program in this country. The author in presenting some problems of the future has this to say about education: "Education must be the central feature of a post-war program for mental health. It is only through systematic health education beginning with the expectant mother and carried on with unfailing continuity from infancy to adolescence in the child that one can hope to create a generation of healthy people. . . . Even preventive medicine spends its effort upon the intermediate stages of disease. Child guidance, for example, is frequently concerned with behavior problems of children which could have been prevented by education; and the school medical and dental services spend far too much of their time in repairing faults that should not have occurred." MILTON E. KIRKPATRICK

Inadequate Diets and Nutritional Deficiencies in the United States—*Report of the Committee on Diagnosis and Pathology of Nutritional Deficiencies. Bulletin 109. Washington: National Research Council,* 1943. 56 pp. Price, $.50.

All workers in the field of nutrition and public health should be grateful for this Report of the Committee on Diagnosis and Pathology of Nutritional Deficiencies, of the Food and Nutrition Board, H. D. Kruse, M.D., Chairman. The committee has brought together the results of a number of dietary surveys and nutritional appraisals during the past 10 years. As stated in the preface of the report, it has been done both for convenient reference and to secure a more proper perspective of the nutritional deficiency problem in the United States. The committee has included also for the first time a considerable amount of dietary survey data previously unpublished.

It will be obvious to the reader, as indicated by the committee, that the surveys show that there is a widespread prevalence of moderately deficient diets and that in addition many factors beside food affect nutritional states. From data secured by new methods, it is indicated that "deficiency states are rife throughout the nation." It is pointed out that this presents both preventive and corrective problems; that effective production and distribution of food must be maintained; that further enrichment of appropriate foods should be considered; and that nutrition education should be extended and intensified.

It is of special interest to the medical profession to read the following concluding comments as to corrective measures: "There is need for detection and therapeutic treatment of deficiency states among the population. For this project it is necessary to disseminate the new diagnostic methods among the medical and public health professions. Foremost among the steps in this direction would be: (1) preparation of a handbook on methods of detecting deficiency states; (2) establishment of training centers for instruction in the medical aspects of nutrition, especially diagnosis of the deficiency

states; and (3) introduction of adequate courses on nutrition, particularly its clinical aspects, into medical schools."

An excellent bibliography of references is included in the report.

GERTRUDE GATES MUDGE

BOOKS RECEIVED

GLOBAL EPIDEMIOLOGY. A Geography of Disease and Sanitation. By James Stevens Simmons, Tom F. Whayne, Gaylord West Anderson and Harold MacLachlan Horack. Vol. 1. Philadelphia: Lippincott, 1944. 504 pp. Price, $7.00.

1944 DIRECTORY OF VENEREAL DISEASE CLINICS. By U. S. Public Health Service. Supplement No. 4 to VENEREAL DISEASE INFORMATION. Revised 1944. Washington: U. S. Government Printing Office, 1944. 59 pp. Price, $.15.

INTERNATIONAL HEALTH DIVISION ANNUAL REPORT FOR 1943. New York (49 West 49th Street): The Rockefeller Foundation, 1943. 170 pp. Free from publisher.

INSTITUTIONAL FACILITIES FOR THE TREATMENT OF ALCOHOLISM. By E. H. L. Corwin and Elizabeth V. Cunningham. Research Report No. 7. New York (60 East 42nd Street): The Research Council on Problems of Alcohol, 1944. 85 pp. Free from publisher.

ANNUAL REPORT OF THE DIVISION OF LABORATORIES AND RESEARCH. Albany: New York State Department of Health, 1943. 121 pp.

MANAGEMENT OF THE YOUNG DIABETIC. Prepared for Physicians and Medical Students. By Robert L. Jackson. Iowa City: State Services for Crippled Children. 29 pp.

DIABETES MELLITUS. INSTRUCTION FOR PARENTS. 14 pp. 1943. RHEUMATIC FEVER IN CHILDREN. INSTRUCTION FOR PARENTS. By Robert L. Jackson. 6 pp. 1941. Iowa City: State Services for Crippled Children.

HOME CARE OF BONE AND JOINT TUBERCULOSIS. A Handbook on Nursing Care. Prepared by Iowa State Services for Crippled Children. T. J. Greteman and Alice Miller. Iowa City: State Services for Crippled Children. 43 pp.

A TEXTBOOK OF PRACTICAL NURSING. By Kathryn Osmond Brownell. 2nd ed. Philadelphia: Saunders, 1944. 411 pp. Price, $3.00.

MALPOSTURE AND SCOLIOSIS EXERCISES. A Hand Book for Parents. Prepared by A. Steindler and T. J. Greteman. Illus. Iowa City: Iowa State Services for Crippled Children, 1940. 32 pp.

KEEPING WELL DRAMAS. Baltimore: Baltimore City Health Department, 1944.

A SHORTER HISTORY OF SCIENCE. By William Cecil Dampier. New York: Macmillan, 1944. 189 pp. 9 plates. Price, $2.00.

HEATING, VENTILATING AIR CONDITIONING GUIDE 1944. New York: American Society of Heating and Ventilating Engineers. Vol. 22. 1168 pp. 1944 Roll of Membership 104 pp. Price, $5.00.

PROCEEDINGS OF THE FIFTY-SIXTH, FIFTY-SEVENTH AND FIFTY-EIGHTH ANNUAL MEETINGS OF THE CONFERENCE OF STATE AND PROVINCIAL HEALTH AUTHORITIES OF NORTH AMERICA. Held at Washington, D. C., 1941, 1942 and 1943.

MARRIAGE AND FAMILY RELATIONSHIPS. By Robert Geib Foster. New York: Macmillan, 1944. 314 pp. Price, $2.50.

HEALTH COUNSELING FOR GIRLS. By Margaret Leonard. New York. Barnes, 1944. 131 pp. Price, $1.50.

SPECIAL DELIVERY. By B. D. Rosenberg. Illus. New York: Ziff-Davis Publishing Company, 1944. 96 pp. Price, $2.00.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

Correction Please—There is much more in this illuminating statistical study, but here is one observation culled from it that you may want to remember: when the age distribution for 1943 is adjusted (to account for the young men no longer in this country) the apparent increase in the crude death rate from 10.65 in 1940 to 10.87 in 1943 is more than accounted for; the corrected rate shows a decrease of 3.1 per cent instead of the indicated increase of 2.1 per cent.

ANON. Morbidity and Mortality from Specific Causes During 1943 and Recent Preceding Years. Pub. Health Rep. 59, 32:1047 (Aug. 11), 1944.

Vimms, Stamms, Bax, *et al.*—Are you one of the horde of vitamin takers? If so, you will be interested in this comparative table which tells you what you are getting and how much you pay for it. You pay through the nose, no matter what brand you favor.

ANON. Comparative Cost of Vitamin Mixtures. J.A.M.A. 126, 1:29 (Sept. 2), 1944.

Down on the Farm—Sanitary engineers have been listing the needed municipal water and sewage treatment projects, the provision of which would go far toward relieving post-war unemployment. To these urban sanitary needs may be added the rural deficiencies. It seems that there are 5 million country homes that cry for safe water supplies, and that an equal number of sanitary privies are still to be built.

ATKINS, C. H. National Inventory of Needs for Sanitation Facilities. Pub. Health Rep. 59, 30:969 (July 28), 1944.

About One Thomas Parran—For your clipping file, you may want this "popular" article on the U.S.P.H.S. and its Surgeon General, and you may be a bit surprised to find this eulogistic account in a publication which is not given to being overly sympathetic with bureaucrats.

COREY, H. Guardian at the Gates of Health. Nation's Business. 32, 9:36 (Sept.), 1944.

Too Much Bed Rest—When I annotated the item "Bed Rest May Be Lethal" in the June Bibliography, I supposed in my innocence that I was calling attention to the arresting and novel opinion of one intrepid breaker-of-new-ground. Only three months later appears this important symposium which particularizes upon the same idea. These authorities believe that extended rest may militate against improvement in heart disease, after surgery, and for certain neuropsychiatric conditions. And the writers lay no claim to originality in expounding their theses.

HARRISON, T. R. Abuse of Rest as a Therapeutic Measure for Patients with Cardiovascular Disease (and five related papers). J.A.M.A. 125, 16:1075 (Aug. 10), 1944.

Laboratory Intelligence—Experiments with yellow fever cultures lend further confirmation to the assumption that none of the viruses, so far studied, is susceptible to the action of the sulfonamides.

KOPROWSKI, H., and LENNETTE, E. H. Propagation of Yellow Fever Virus in Tissue Cultures Containing Sulfonamides. Am. J. Hyg. 40, 1:1 (July), 1944.

At a **Cost of $2.13 per**—With the highest, large city syphilis rate among its military selectees, Philadelphia had a big follow-up job to do. The city Health Department had not the requisite staff, so a coöperative project was organized. Each registrant was sent a friendly letter advising him to seek treatment. This did the trick in 2 out of 5 cases. Two weeks later the others received a tough letter which produced results in almost another 1 out of 5. How the 2 remaining recalcitrants were brought to heel is the burden of this paper.

KREIGE, A. M. A Technic of Follow-Up of Selective Service Registrants With Syphilis in Philadelphia. Ven. Dis. Inform. 25, 6:167 (June), 1944.

We **Need More Papers of This Kind**—So practical and down-to-earth is the advice to the public health nurse about problems she will have to solve in attempting to carry an increased tuberculosis case load that this paper becomes of interest to more of us than the nurses to whom it is directed.

LINCOLN, L. A. Solving Tuberculosis Problems in War Time. Pub. Health Nurs. 36, 8:394 (Aug.), 1944.

Extended Medical and Hospital Service for Industry—This symposium is mostly about the Wagner bill and what industry, industrial medical services, and insurance companies can do to forestall governmental health insurance plans.

MANSON, M. H. What Is Extended Medical Service? (and five related papers). Indust. Med. 13, 8:609 (Aug.), 1944.

Foot Note for the Future—DDT, the valuable, new and as yet unavailable insecticide, was fed in large doses to a variety of farm and experimental animals. The lesions that were produced are described—the most outstanding being tremors in the muscles of extremities.

NELSON, A. A., *et al.* Histopathological Changes Following Administration of DDT to Several Species of Animals. Pub. Health Rep. 59, 31:1009 (Aug. 4), 1944.

Penicillin Gallops to the Rescue—Briefly outlined is the present-day status of the treatment of both syphilis and gonorrhea. If you read extensively in this field, you will find little that is new to you here, but still the condensed summary should prove illuminating.

NELSON, N. A. The Treatment of Syphilis and Gonorrhea as of Today. Am. J. Nurs. 44, 8:737 (Aug.), 1944.

Skin vs. Deep Cancers—This man believes that many inoperable cancers might be prevented by provoking and removing skin epitheliomas. Once more he asks that a commission of experts be appointed to consider his suggestion.

PELLER, S. Race, Stock and Environment in Human Cancer. J. Hered. 35, 6:175 (June), 1944.

Did Deficient Italian Health Service Play a Part in That Country's Downfall?—Though this paper is mostly about the exotic diseases the soldiers will bring home with them, there is much searching consideration given to the effect of the military experience of both medical officers and enlisted men upon the future of medical care and public health. Addressed to a Massachusetts audience, it still has wide applicability.

RUSSELL, F. F. The War and Public Health. New Eng. J. Med. 231, 7:225 (Aug. 17), 1944.

Last Word on Post-Vaccinal Jaundice—Considered most plausible is the hypothesis that the agent causing the lamented outbreak of jaundice in 1942, following yellow fever vaccinations, was the accidental introduction of a virus capable of producing jaundice when supposedly normal human blood was used in the manufacture of the yellow fever vaccine. Serum-free vac-

cine is now practical, so there need be no recurrence of the disease among our troops.

SAWYER, W. A., *et al.* Jaundice in Army Personnel in the Western Region of the United States and Its Relation to Vaccination against Yellow Fever. Am. J. Hyg. 40, 1:35 (July), 1944.

Showing Us the Door—It is now plain to all that industrial health is not a social project, nor even a public health project: it is an enterprise of industry and medicine, says the editor in the issue of *Industrial Medicine* that carries a fine symposium on the employment of the sub-standard worker. Any public hygienist who refuses to have the door editorially slammed in his face will find the papers useful. Heart cases, neuropsychiatric workers, the maimed, and those with defective eyes and ears are the objects of consideration.

SHAFER, M. M., *et al.* Who Can Work? Indust. Med. 13, 7:531 (July), 1944.

Insured Medical Care—If you hate the Wagner-Murray-Dingell Bill and all its social implications, then you will dislike this dissertation on health insurance. If the door of your mind is the least bit ajar, you cannot but be impressed with the reasonableness of this persuasive writer. If the bill is defeated, as it is likely to be, for our present Congress is conservative he says, then we may expect another similar bill because the need remains as acute as ever.

SIGERIST, H. E. Medical Care for All the People. Canad. Pub. Health J. 35, 7:253 (July), 1944.

Department of Inner Meaning of Words—Preventive medicine, these writers assert, is commonly restricted to mean the intervention in a limited range of situations in which a specific disease can be warded off or a specific deterioration can be forestalled. The logical culmination of preventive medicine transcends the healing of the sick and becomes the building and maintenance of health. Ways in which the training for these broader goals can be integrated in medical education is the point of this paper.

In the succeeding issue of *Science*, Iago Galdston points to the connotations which unfit the term "preventive medicine" for serving as the name of this new endeavor, and he bravely proposes as a substitute, "eubiotic medicine." Have you a handier handle?

SMITH, G., and EVANS, L. J. Preventive Medicine. An Attempt at a Definition. Science. 100, 2586:39 (July 21), 1944.

ASSOCIATION NEWS

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Public Health Nursing Section

Gertrude Beattie, R.N., 101 N. 4th St., Easton, Pa., Exec. Director, Easton Visiting Nurse Assn.

Anna T. Beckwith, R.N., State Capitol, Helena, Mont., Secy., Montana State Board of Examiners for Nurses

Gertrude M. Church, State Department of Health, Lincoln, Nebr., Director, Div. of Public Health Nursing

Wava L. Dixon, 407 W. Story, Bozeman, Mont., Local Supervisor of Nurses, City-County Health Unit

Margaret E. Hart, 320 Sherbrook St., Winnipeg, Man., Canada, Educational Supervisor, Manitoba Dept. of Health and Public Welfare

Orpha M. LaCroix, 416 Avenue A, Bismarck, N. D., Consultant on Tuberculosis Nursing, State Dept. of Public Health

Hilde R. Marble, 1844 Athens St., Boulder, Colo., Student, University of Colorado

Leona Rubbelke, R.N., Burke Ward Health Unit, Minot, N. D., Supervising Nurse

Alberta N. Shaw, R.N., Box 113, Moscow, Kan., Field Nurse, Kansas Crippled Children's Commission

Epidemiology Section

Katharine R. Boucot, M.D., Herman Kiefer Hospital, Detroit 2, Mich., Resident in Tuberculosis

School Health Section

William H. Bristow, Ed.D., 110 Livingston St., Brooklyn 2, N. Y., Asst. Director, Bureau of Reference Research and Statistics, Board of Education

Louis Hutto, Ph.D., State Department of Education, State House, Augusta, Maine, Director of Health and Physical Education

Leslie W. Irwin, Ph.D., Dept. of Education, University of Chicago, Chicago, Ill., Director of Health and Physical Education

Anna V. Matz, R.N., M.A., 40 East 10th St., New York, N. Y., District Supervising Nurse, Dept. of Health

Arthur H. Steinhaus, Ph.D., U. S. Office of Education, Washington 25, D. C., Chief, Div. of School Health and Physical Education

Douglas B. Taylor, M.A., 700 East 43rd, Austin, Tex., Health Education Consultant, State Health Dept.

Arthur Williams, D.D.S., M.P.H., 1260 Columbia Rd., N.W., Washington 9, D. C., Dentist, Washington Health Dept.

Dental Health Section

R. Duane Hayes, D.D.S., 420 Sixth Ave., N., Nashville 3, Tenn., Dental Officer and Consultant for Middle Tennessee Dental Hygiene Service, State Dept. of Public Health

Sylvia Levy, D.H., 438 Beach 67th St., Arverne, N. Y., Dental Hygienist, New York City Dept. of Health

Maury Massler, D.D.S., 808 South Wood St., Chicago 12, Ill., Supervisor of Dental Services, Research and Educational Hospital

J. Ben Robinson, D.D.S., 618 West Lombard St., Baltimore 1, Md., Dentist

William H. Rumbel, D.D.S., State Dept. of Health, Charleston 5, W. Va., Director, Bureau of Dental Health

Isaac Schour, D.D.S., Ph.D., 808 South Wood, Chicago, Ill., Professor of Dental Histology and Head of Dept., University of Illinois College of Dentistry

Carl L. Sebelius, D.D.S., M.P.H., 420 Sixth Ave., N., Nashville 3, Tenn., Director, Dental Hygiene Service, State Dept. of Public Health

Ernest F. Soderstrom, D.D.S., 409–10 Beaty Bldg., Modesto, Calif., Member, Board of Education, Modesto Elementary School, High School and Junior College

Frances A. Stoll, 630 West 168th St., New York 32, N. Y., Director, Courses for

Dental Hygienists, School of Dental and Oral Surgery, Columbia University

Unaffiliated

Frank C. Comploier, 130–37–227th St., Laurelton, N. Y., Acting Director, Physicians' Service, Lederle Laboratories, Inc.

Captain Samuel B. Goldwasser, Sanitary Inspector, United States Army

Arax Jaboolian, Public Health Library, 125 Worth St., New York 13, N. Y., Librarian

Florence G. McKibben, 44 Stow Lane, Route 2, Lafayette, Calif., Member, Research Committee, Camp Committee, Contra Costa Public Health Assn.

Jessie L. Ruff, 903 North State St., Apt. 5, Jackson, Miss., Administrative Asst., State Board of Health

Szeming Sze, M.B., 1452 Juniper St., N.W., Washington 12, D. C., with Health Division, United Nations Relief and Rehabilitation Administration

DECEASED MEMBERS

W. F. Davison, M.D., Kingston, Pa., Elected Member 1930, Public Health Education Section

Selskar M. Gunn, New York, N. Y., Elected Member 1905, Elected Fellow 1922, Charter Fellow, Unaffiliated

M. B. Owens, M.D., Newport, Ark., Elected Member 1931, Health Officers Section

NEWS FROM THE FIELD

FORECAST OF POST-WAR NEEDS IN SANITATION FACILITIES

According to an announcement by the Division of Sanitary Engineering, U. S. Public Health Service, Washington, there are deficiencies in water supplies, sewage disposal, and other sanitary facilities in many urban and rural areas throughout the United States, which now menace the health of millions and cause huge economic losses. Four studies have recently been completed as parts of a national inventory of needs for sanitation facilities. Needs are presented which include an estimated total of three and a half billion dollars which should be made available as quickly as supplies of labor and materials and other practical considerations permit. These would largely pay for themselves in savings of health and economic losses according to the Public Health Service engineers.

The inventory of rural sanitation needs shows that more than five million rural homes now need new or improved water supplies and that more than five million rural homes—including 846,148 entirely without toilet facilities—need sanitary privies as a minimum. This inventory shows that an estimated 50,000,000 persons or 12,000,000 families, are not now served by public water supplies and that a total of approximately 6,550,000 rural homes are not supplied with running water. The estimate would require about $265,000,000 to provide safe water supplies for the 5,294,000 rural homes which need them. It is further estimated that it would cost about $180,000,000 to provide privies for the new homes now without sanitary facilities and to replace half of the 8,505,572 existing outside toilets, about 50 per cent of which are insanitary.

The inventory of public water supply facilities indicates that new and extended water supply systems costing more than $800,000,000 are needed to serve adequately the 86,000,000 persons who now are served or could be served by public water supply facilities in communities with 200 or more population. Estimates of loss from sanitary and other defects in public water supplies include $24,000,000 from water of excessive hardness, $10,000,000 from water-borne disease, and at least $10,000,000 because of miscellaneous other defects in the quality.

The inventory of public sewage needs in states indicates that there is need for $2,255,000,000 in new or additional sewers and sewage treatment systems for almost 14,000 of the 16,752 communities in the United States. This includes an estimated cost of about $1,200,000,000 for needed new sewer systems and extensions and $1,000,000,000 for facilities to treat sewage and industrial wastes. The Public Health Service engineers estimate that the annual cost of water pollution which would be saved by such investments, would over a period of years very nearly pay for all the sewage treatment needs of every community of more than 200 inhabitants in the United States.

A final study on milk pasteurization needs proposes 438 milk pasteurization plants which would cost an estimated $8,123,500 for 34 states and Alaska. The yearly economic loss attributable to milk-borne disease outbreaks in the United States is at least $3,000,000, mostly due to raw milk. The inventory showed that more than 97 per cent of milk supplies of communities in cities of 500,000 population or more is pasteurized but that less than 25 per cent is pasteurized in communities under 2,500 population.

PLANS FOR STATE HEALTH DEPARTMENT BUILDINGS

Commissioner J. E. Offner of the West Virginia Department of Health is anxious to obtain information concerning plans, specifications, and costs of any building erected within the past five years for the sole use of a state health department.

Similar plans concerning health department buildings proposed for post-war construction would also be helpful in formulating a post-war building program for the West Virginia State Health Department.

If readers can supply any information along these lines, they should communicate directly with Dr. J. E. Offner, State Health Department, Charleston 5, W. Va.

MICHIGAN SCHOOL OF PUBLIC HEALTH APPOINTMENTS

Henry F. Vaughan, Dr.P.H., Dean of the School of Public Health, University of Michigan, Ann Arbor, has announced that Earnest Boyce, M.S., has been appointed Professor of Municipal and Sanitary Engineering in the College of Engineering and Professor of Public Health Engineering in the School of Public Health. Mr. Boyce for many years was Chief Engineer of the Kansas State Board of Health and served as Associate Professor of Sanitary Engineering at the University of Kansas. He has recently been on duty with the Public Health Service as senior public health engineer.

Dr. Vaughan also announced the appointment of John J. Hanlon, M.D., M.P.H., as Resident Lecturer in Public Health Economics, to be associated with Nathan Sinai, Dr.P.H., in that field. Dr. Hanlon received his training at Massachusetts Institute of Technology, his M.D. from Wayne University, and his M.P.H. in 1942 from Johns Hopkins University. For 6 years he was associated with the Detroit Department of Health and then became Health Officer in Bradley County, Tenn., later Director of Nutrition for the Tennessee State Department of Health and Acting Associate Professor of Public Health Administration at the University of North Carolina School of Public Health, Chapel Hill.

The appointment was also announced of Robert Smalley Ingols, Ph.D., as Instructor in Public Health Engineering. Dr. Ingols has been Research Fellow for the Florida Citrus Commission at Winter Haven. He received his Master's degree at Columbia in 1937 and his Ph.D. from Rutgers in 1939. He later served as chemist and research fellow on several water and sewage projects in New Jersey and New York City.

CHILD GUIDANCE CLINIC IN BROWN COUNTY, WIS.

Brown County, Wis., by action of its Board of Supervisors, will employ a psychiatrist to hold a child guidance clinic for the furtherance of mental hygiene. This continues a demonstration program carried on for two years by the Wisconsin State Board of Health. Brown County is said to be the first county in Wisconsin to take steps to inaugurate a mental hygiene program. On the committee are G. M. Shinners, M.D., Health Commissioner, Green Bay, and M. W. Meyer, M.D., District State Health Officer.

MISSISSIPPI STATE BOARD COMMENDED FOR CARE OF PUBLIC HEALTH

The Jefferson Davis County Committee of One Hundred, composed of civic minded Negro citizens of the county, recently paid tribute to the Mississippi State Board of Health and its Director, Felix J. Underwood, M.D., Jackson, for the effective health program carried on for the benefit of all people. According to the *Journal of the American Medical Association*, the

letter acknowledging the tribute was sent to Dr. Underwood because the committee "was especially proud of the local staff whose members are thoroughbreds without exception, competent, efficient, devoted to duty and possessed with a keen appreciation of human personality." According to the letter this agency "is an endorsement of the American way of life and points the way for future action." The Committee of One Hundred is an organization for the general improvement of the conditions of the colored people in Mississippi.

AMERICAN RED CROSS REPLACES NURSING CHIEF

The American Red Cross has announced that Miss Mary Beard, who for the last 6 years has been Director of the American Red Cross Nursing Service, has resigned for reasons of health. Virginia M. Dunbar, who has served as Miss Beard's deputy, will be her successor.

Appreciating the work which Miss Beard has done in war and peace, the Red Cross pointed out her responsibility for the recruitment of 50,000 American nurses who have been added to the Army and Navy Nurse Corps and her work on many of the wartime committees developing the Nurses' Aide Corps and other services. Miss Beard was formerly on the staff of the International Health Division, Rockefeller Foundation.

Miss Dunbar, former Assistant Director of the University of California School of Nursing, San Francisco, has been on the staff of the Red Cross for 6 years and has been identified in planning the home nursing courses now being given throughout the country.

NUTRITION FOUNDATION AIDS RESEARCH

According to the report of Charles Glenn King, Ph.D., Scientific Director of the Nutrition Foundation, Inc., New York, N. Y., the Foundation has appropriated since May, 1942, when its first grants were made, more than $530,000 for studies in the science of nutrition. Studies on the human requirements of specific nutrients received $66,000, studies on the origins and functions of individual nutrients received $134,000, maternal and infant nutrition $26,000, public health problems in nutrition $106,000, educational and professional training $42,000, and nutrition studies related directly to the war $151,000.

METROPOLITAN LIFE PROMOTES PUBLIC HEALTH LEADERS

Among those recently listed for promotions by the Metropolitan Life Insurance Company, New York, were the following, with the new titles:

Donald B. Armstrong, M.D., New York. Second Vice President in charge of welfare.
Louis I. Dublin, Ph.D., New York, Vice President and Statistician.
William P. Shepard, M.D., San Francisco. Third Vice President in charge of welfare work in the Pacific Coast Head Office.

IOWA PUBLIC HEALTH ASSOCIATION

The new officers of the Iowa Public Health Association, elected at the 18th Annual Meeting of that society in May, are:

President—Paul J. Houser, Des Moines
President-elect—C. L. Putnam, M.D., Des Moines
Vice-President—Hazel Roberts, R.N., Manchester
Secretary-Treasurer—Carl F. Jordan, M.D., Des Moines

AMERICAN INSTITUTE OF NUTRITION

According to *Science*, the new officers of the American Institute of Nutrition have been elected as follows:

President—Dr. Icie Macy Hoobler
Vice-President—Dr. William C. Rose
Secretary—Dr. Arthur H. Smith
Treasurer—Dr. E. M. Nelson
Councilors—Drs. Genevieve Stearns, T. H. Jukes, and C. A. Elvehjem

COUNCIL ON RHEUMATIC FEVER

A new organization called the Council on Rheumatic Fever, with offices at 1790 Broadway, New York, N. Y., has been created as a voluntary agency for promoting interest in and attention to rheumatic fever. Among the organizations represented on the Council are:

American Public Health Association
American Medical Association
American College of Physicians
American Rheumatism Association
American Academy of Pediatrics
American Hospital Association
American Nurses Association
American Heart Association

The new group was organized following action taken at a conference held in New York in January, 1944, at which the American Public Health Association was represented by David Rutstein, M.D., Deputy Commissioner of Health, New York City Department of Health, and Reginald M. Atwater, M.D., Executive Secretary, American Public Health Association. According to an announcement by the American Heart Association, under whose leadership the new group was organized, it is hoped that a fund of $50,000 can be obtained within the near future to justify the selection of a director and the employment of an office staff.

Currently about $7,000 is available, with another $5,000 in sight. Negotiations are said to be in progress with officers of the American Legion in the hope that the Legion may accept responsibility for the financial support of the Council on a national scale.

The American Public Health Association will be represented on the Council by Dr. Rutstein and by George M. Wheatley, M.D., New York, N. Y.

FLORIDA OPENS EDUCATIONAL PROGRAM FOR FOOD HANDLERS

An announcement has been made that the Jacksonville Department of Health (Fla.), in coöperation with the state and county departments, have begun "a perpetual food handlers educational program, to include a 12 hour course comprising 6 meetings 2 hours in length and designed to meet the practical needs of food handlers."

MICHIGAN BEGINS FLUORINE-DENTAL CARIES PROGRAM

Grand Rapids, Mich., has been chosen for a control experiment in dental caries under the auspices of the Michigan Department of Public Health, the U. S. Public Health Service, and the University of Michigan School of Dentistry, according to the *Journal of the A.M.A.* The experiment will include the addition of one part per million of sodium fluoride to the municipal water supply to determine whether reductions can be made in dental caries. The plan to add the fluorine to the Grand Rapids water supply was approved by the City Commission. Grand Rapids has been chosen because it has a stable population suitable for study over an extended period.

NEW YORK SYMPOSIUM ON FLUORINE AND DENTAL HEALTH

The New York Institute of Clinical Oral Pathology has announced an open meeting to be held in the New York Academy of Medicine on October 30 at 8:15 p.m. Among the contributors to the subject of Fluorine in Dental Public Health are Dr. Frederick S. McKay, Colorado Springs, Colo.; Dr. H. Trendley Dean, U. S. Public Health Service, Bethesda, Md.; Dr. Wallace D. Armstrong, Minneapolis, Minn.; Dr. Basil G. Bibby, Boston, Mass., and Dr. David B. Ast, Albany, N. Y.

MASSACHUSETTS INDUSTRIAL MENU AND NUTRITION SERVICE

The Massachusetts Division of Occupational Hygiene, in coöperation with the Associated Industries of Massachu-

setts, have begun what is intended to be a weekly menu and nutrition service available to Massachusetts industries.

The service is designed to aid managers of company-operated plant cafeterias by providing a carefully planned menu with suggested meal combinations that are nutritionally adequate and which observe ration allotments. The service facilitates the use of the cafeteria as an effective tool in a nutrition education program. Quindara Oliver Dodge is the Chairman of the Subcommittee on Industrial Nutrition of the State Committee on Public Safety, Boston.

W. K. KELLOGG FOUNDATION CREATES ADVISORY COMMITTEE ON PUBLIC HEALTH

An announcement has recently been made by the W. K. Kellogg Foundation, Battle Creek, Mich., of the appointment of advisory committees in three fields comprising its major interests to evaluate the present programs and activities, review the major financial requests presented to the Foundation, and to develop worth while activities in their respective fields. Committees have been named in public health, hospitals, nursing, education, and libraries. Committees in medicine and in public health engineering are planned.

The Public Health Advisory Committee consists of Wilson G. Smillie, M.D., New York, N. Y., Gregoire F. Amyot, M.D., Victoria, B. C., Henry F. Hemholz, M.D., Rochester, Minn., and Hugh R. Leavell, M.D., Louisville, Ky.

The Hospital Advisory Committee consists of James A. Hamilton, New Haven, Conn., Robin C. Buerki, M.D., Philadelphia, Pa., Basil C. MacLean, M.D., Medical Corps, U. S. Army, and John R. Mannix, Chicago, Ill.

The Nursing Advisory Committee consists of Leah Blaisdell Bryan, R.N., New York, N. Y., Minnie E. Pohe, R.N., Washington, D. C., Ruth B. Freeman, R.N., Minneapolis, Minn., and Lucile Petry, R.N., Washington, D. C.

INDUSTRIAL HYGIENE COURSE AT DE LAMAR INSTITUTE

H. S. Mustard, M.D., Director of the De Lamar Institute of Public Health, Columbia University College of Physicians and Surgeons, New York, N. Y., has announced that the Institute will offer an intensive course in industrial hygiene during the period October 30 to December 6, 1944. According to Dr. Mustard, the course will be so arranged that in any given week instruction will be focused upon one important phase of the subject and the students in the course may register for one or more weeks. The weekly schedule follows:

October	30—Dermatoses
November	6—Dust problems and hazards
November	13—Medical and surgical aspects
November	20—Plasticisers and solvents
November	27—Metals
December	4—Administrative aspects
December	11—Dental problems and services

Persons interested should communicate with the Director, 600 West 168th Street, New York, N. Y.

AMERICAN RED CROSS NAMES DR. DUBLIN TO EXECUTIVE POSITION

Dr. Louis I. Dublin, Second Vice President and Statistician of the Metropolitan Life Insurance Company, has accepted the position of assistant to the chairman of the American Red Cross, according to an announcement by Basil O'Connor, chairman of the Red Cross Central Committee. Dr. Dublin will be on loan from the Metropolitan for a limited period and will devote full time to his Red Cross duties, beginning October 1. These will include among others acting as coördinator of the various operating divisions and serving as liaison between the chairman and the operating vice-chairmen.

"Dr. Dublin has had long experience in public health work," Mr. O'Connor said, "and is almost as well known abroad for his services in that field as in this country. He served the American Red Cross in the first World War as a member of Red Cross commissions in Italy and in the Balkans. He has been President of the American Public Health Association, President of the American Statistical Association, and is now chairman of the board of the American Museum of Health. As Vice President of the Metropolitan in charge of public health relations, Dr. Dublin has taken active leadership in various campaigns for better public health and accident prevention. He has played a prominent rôle in raising the level of public health practices not only in official agencies but also in the operations of the voluntary health organizations."

As head of the Metropolitan's Statistical Bureau since 1911, Dr. Dublin has published many books and pamphlets on public health and on the economics of health. He has been called upon by the heads of many federal and state agencies to make health and economic surveys and to advise on various health projects. He served in 1942 on a commission appointed by Secretary of War Henry L. Stimson to study the operations of the Surgeon General's office, and in 1943 made a similar study for Surgeon General Ross T. McIntire of the Navy.

PERSONALS

Central States

A. C. BACHMEYER, M.D.,† Director of the University of Chicago Clinics, Chicago, Ill., was appointed to conduct a two year survey of America's hospital system at the initial meeting of the Commission on Hospital Care in Philadelphia August 1.

LEONARD C. BATE, M.D., Stambaugh, Mich., has resigned as Director of Iron-Ontonagon County Health Department, effective August 15 to enter private industrial practice.

WILLARD G. BEATTIE, M.D., has been appointed Health Office of Ferndale, Mich.

RICHARD T. CAREY,† formerly with the Technical Department of E. I. Du Pont & Company, has joined the Laboratory Division of the Cudahy Packing Company, Omaha, Nebr.

GEORGE DONALD CUMMINGS, PH.D., M.D.,* has been appointed Director of the Bureau of Laboratories of the Michigan State Department of Health, succeeding the late C. C. YOUNG, D.P.H., who had served as laboratory director since 1919. Dr. Cummings is a graduate of the University of Michigan, Ph.D. 1934, and of Wayne University, M.D. 1943. He has been connected with the Michigan Department of Health Laboratories since 1926, serving in Grand Rapids, Powers, and Lansing. Recently he organized the diarrhea and enteritis study as a joint project of the Health Department Laboratories and the Kellog Foundation. For two years he was Secretary of the Laboratory Section, A.P.H.A.

RALPH J. DORAN, M.D., U. S. Public Health Service, has been appointed to the Dayton Division of Health, Dayton, Ohio, as Venereal Disease Control Officer.

H. G. DYKTOR* has resigned as chief engineer of the Michigan Bureau of Industrial Hygiene, Lansing, after more than 4 years of service, and has been appointed chief of the newly created Bureau of Industrial Hygiene in the Division of Health, Cleveland, Ohio. Mr. Dyktor is Chairman of the Industrial Hygiene Section, A.P.H.A.

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* Fellow A.P.H.A.
† Member A.P.H.A.

ROBERT E. FLOOD, M.D., Northport, Mich., has been appointed Health Officer of St. Joseph County, succeeding FREDERICK A. MUSACCHIO, M.D., M.S.P.H., who resigned to accept a similar position in Texas.

SIDNEY I. FRANKLIN, M.D., M.S.P.H.,* Newberry, Mich., has resigned as Director of the Luce-Mackinac County Board of Health.

F. G. GUNLAUGSON, M.D., M.P.H., has been appointed Director of Maternal and Child Hygiene in the North Dakota State Department of Health. Dr. Gunlaugson has been a County Health Officer in Minnesota, and is a graduate of the University of Minnesota in Medicine and in Public Health of Johns Hopkins University.

AWRA A. HOYT, M.D., who served as Health Officer of Battle Creek, Mich., for 24 years, resigned recently.

FRANCIS C. LAWLER, Sc.D.,* Professor of Bacteriology and Immunology, University of North Dakota School of Medicine, Grand Forks, N. D., was elected President of the North Dakota Public Health Association.

CLEMENT E. LOCKWOOD, M.D., Holly, Mich., has been appointed Director of the Alger-Schoolcraft District Health Department, succeeding HENRY H. ASHER, M.D.,† who died recently.

SAMUEL N. MALLISON, M.D.,† has been appointed to the new position of Superintendent of Health of the City of Decatur, Ill. Dr. Mallison will be in charge of the public health work of the city and assume much of the work formerly handled by PIERRE A. STEELE, M.D., City Commissioner of Public Health and Safety.

R. H. MARKWITH, M.D.,* Columbus, Ohio, who for the past 5 years has been Director of Health in the Ohio State Department of Health, has retired at the conclusion of his term and has accepted a position as Assistant Medical Director of the Brown Clinical Laboratory, Columbus, Ohio.

NEAL J. MCCANN, M.D., has resigned as Health Officer of Ishpeming, Mich.

CYRUS P. MCRAVEN, M.D., Macomb, Ill., has been appointed Health Director of McDonough and Fulton Counties, succeeding the late EDWARD L. HILL, JR., M.D. Mount Sterling, Ill.

FRANCIS H. REDEWILL, JR., M.D., M.S.P.H.,† has designed as Health Officer of Sioux Falls, S. D., to accept a position as Venereal Disease Control Officer in the Los Angeles County Health Department, Los Angeles, Calif. His successor is EMIL G. ERICKSEN, M.D.,† who has been assistant to Dr. Redewill.

HUGH B. ROBINS, M.D.,* has been appointed Health Officer of the City-County Health Department in Battle Creek, Mich.

BENJAMIN WHAM, Winnetka, Ill., has been appointed Chairman of the Illinois State-wide Public Health Committee to succeed FREDERIC C. WOODWARD, LL.D., Chicago, Ill.

Eastern States

JAMES A. DOLCE, M.D.,† Health Commissioner at Wilmington, Del., has been appointed County Health Officer at Fairmont, W. Va. His successor is LT. COL. A. PARKER HITCHENS, M.D.

LT. COL. GARFIELD GEORGE DUNCAN, M.C., of Philadelphia, Pa., has been awarded the Legion of Merit by the War Department for his outstanding experimental work on the suppressive treatment of malaria in the Southwest Pacific Area. A native of Ontario, Colonel Duncan was graduated from McGill University School of Medicine in 1923. Prior to entering the service, he was Associate

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* Fellow A.P.H.A.
† Member A.P.H.A.

Professor of Medicine at Jefferson Medical College, Philadelphia.

LT. COL. ARTHUR PARKER HITCHENS, M.D.,* Professor of Public Health and Preventive Medicine, University of Pennsylvania School of Medicine, Philadelphia, Pa., has been appointed Health Commissioner of Wilmington, Del.

FRED L. MOORE, M.D.,* who has been Director of the Division of Public Health Studies of the Commonwealth Fund, New York, N. Y., has been appointed to the newly established professorship of Social and Environmental Medicine in the Department of Preventive Medicine and Community Health, Long Island College of Medicine, Brooklyn.

LOUIS H. PINK, President of the Associated Hospital Service of New York, has been elected a member of the Board of Directors of the Visiting Nurse Service of New York. Mr. Pink is the author of a recent book, *Freedom from Fear.*

CAPTAIN THOMAS E. SHAFFER, M.C., U. S. Army, of New Haven, Conn., has recently been assigned to the Infectious Disease Control Branch of the Epidemiology Division, Preventive Medicine Service, Office of the Surgeon General, Washington. Capt. Shaffer is a graduate of Cornell Medical College in 1932 and was an instructor in pediatrics at Yale University School of Medicine in civil life.

LIEUT. R. S. TAGGART, M.D., formerly District Sanitary Engineer for the New York State Department of Health, has been appointed to a post in pest control work in the Preventive Medicine Service, Office of the Surgeon General, Washington, succeeding CAPT. D. F. SMALLHORST, SN.C.,† who has been assigned overseas.

FREDERICK A. WOLL, PH.D.,† Professor of Hygiene at the College of the City of New York and Director of the Department of Hygiene, has retired at the age of 70.

Southern States

OTTIS L. ADER, M.D., Walkertown, N. C., has been named Director of the Venereal Disease Clinic of the Durham City-County Health Department, succeeding ROY H. MCDOWELL, M.D., Dunham, N. C.

WILLIAM O. BINGHAM, M.D., Roan Mountain, Tenn., has resigned as Health Officer of Carter County.

PAUL BRINDLEY, M.D., Professor of Pathology, University of Texas School of Medicine, Galveston, Tex., recently returned from a hospital tour in Costa Rica, Guatemala, Honduras, and Mexico City, where he had been making special studies in tropical medicine under the auspices of the John and Mary R. Markle Foundation.

MARION MURPHY BROOKE, Sc.D., Associate in Parasitology at the School of Hygiene and Public Health of the Johns Hopkins University, Baltimore, Md., has been appointed Associate Professor of Preventive Medicine at the University of Tennessee College of Medicine, Memphis, Tenn.

LT. COL. MARTIN A. COMPTON (MC), has been appointed a member of a board of the Office of the Surgeon General, Washington, D. C., the purpose of which is to prepare, develop, and implement the medical portion of the War Department's program for aid to civilian populations in liberated countries. This board was established in June, 1943.

JAMES P. CROLEY, M.D., Plymouth, N. C., has resigned as head of the District Health Department serving Tyrrel, Hyde, and Washington Counties.

EDWIN F. DAILY, M.D.,* Director of

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* Fellow A.P.H.A.
† Member A.P.H.A.

the Division of Health Services of the Children's Bureau, U. S. Department of Labor, Washington, D. C., has been granted leave to serve with the Army of the United States to assist in reëstablishing civilian medical and hospital services in some of the liberated countries.

JUDSON D. DOWLING, M.D.,* Sr. Surgeon, USPHS (R), Birmingham, Ala., has been assigned to the New Mexico Department of Health, Santa Fe, as Assistant State Director of Health.

ROBERT B. C. FRANKLIN, M.D.,† Mount Airy, N. C., has resigned as Health Officer of Surry County to enter military service.

JOHN C. HUME, M.D., U. S. Public Health Service, who has been serving as Venereal Disease Control Officer at Wilmington, N. C., has been detailed as Acting Director of the Bureau of Venereal Disease of the West Virginia Department of Health.

ERNEST W. PROTHRO, M.D.,† has been appointed Acting Officer of the Laredo-Webb County Health Unit, Austin, Tex., succeeding Arthur E. Ballard, M.D., who resigned to take a similar position at Belton, Tex.

PASSED ASST. SURGEON (R) ROBERT M. ROBBINS, M.D.,† formerly Director of the three northwestern county health departments of Walton, Okaloosa, and Holmes, Florida, has been transferred to Georgia and appointed as Asst. Commissioner of Health in the Macon-Bibb County Health Department, Georgia, as of August 1.

LT. COL. E. S. A. ROBINSON, M.C., A.U.S.,* Director of the Laboratory Division in the Office of the Surgeon General, has been appointed to serve on the American Red Cross Subcommittee on Blood Derivatives and Plasma Fractionation.

JACOB LELAND TANNER, M.D., has resigned as Health Officer of Mercer County, Ky., to enter private practice of medicine in Henderson, Ky.

A. L. VAN HORN, M.D., has been appointed Director of the Division of Health Services of the Children's Bureau, Washington, D. C., to succeed EDWIN F. DAILY, M.D.,* who is on leave to serve with the Army of the United States.

LT. COL. THOMAS G. WARD, M.C.,† has been appointed Director of the Epidemiological Division of the Preventive Medicine Service, Office of the Surgeon General, Washington, succeeding LT. COL. ARTHUR P. LONG, who has been assigned to overseas duty. Colonel Ward is a graduate of Baylor University in medicine and has received the M.P.H. and Dr.P.H. degrees from Johns Hopkins University. He recently received the Legion of Merit award in recognition of outstanding services.

Western States

MILDRED T. WOOLLEY, DR.P.H.,† formerly Director of the Arizona State Laboratory, has been appointed Director of the Long Beach City Public Health Laboratory, Long Beach, Calif.

Foreign

BRIGADIER GENERAL WARREN FALES DRAPER, M.D.,* Chief of the Public Health Branch of Civil Affairs in the European theatre, was promoted by the Army to Major General, as announced by Supreme Headquarters in August.

ALFRED L. FRECHETTE, M.D., M.P.H.,† has returned to Concord, N. H., and has resumed his duties as State Health Officer after service as Surgeon with the U. S. Public Health Service in Africa.

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* Fellow A.P.H.A.
† Member A.P.H.A.

Panama

PVT. ANATOLE SOLOW,† on duty with an Engineer Topographical unit in the Panama Canal Department, has received a letter of commendation from Lt. Gen. George H. Brett, Commanding General, congratulating him on the manner in which his lecture of July 26 on "Post-War Housing and City Planning" was received by the Panama Canal Natural History Society.

CLARENCE H. WARING, M.D., Medical Director, U. S. Public Health Service, has recently succeeded HENRY A. HOLLE, M.D.,† as chief quarantine officer of the Panama Canal Health Department.

Venezuela

MILTON LOPEZ HENRIQUES, M.D., Director of Local Health Services for the Ministry of Health of Venezuela, is spending two months with the State Health Department of Kentucky under the auspices of the Rockefeller Foundation.

Death

LOUIS A. JULIANELLE, PH.D., of 234 Mamaroneck Road, Scarsdale, N. Y., Chairman of the Division of Infectious Diseases of the Public Health Research Institute of the City of New York, Inc., since 1942, died on August 12.

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CONFERENCES AND DATES

American Academy of Ophthalmology and Otolaryngology. Chicago, Ill. October 8–12.

American Dietetic Association—27th Annual Meeting. Palmer House, Chicago, Ill. October 25–27.

American Water Works Association—
Southwest Section—Hotels Stephen F. Austin and Driskill, Austin, Tex. October 17–19.
Missouri Valley Section—President Hotel, Kansas City, Mo. October 23–24.
California Section—Biltmore Hotel, Los Angeles, Calif. October 24–26.
West Virginia Section—Chancellor Hotel, Parkersburg, W. Va. October 26–27.
New Jersey Section—Atlantic City, N. J. November 2–4.
Four States Section—Benjamin Franklin Hotel, Philadelphia, Pa. November 8–10.
Virginia Section—John Marshall Hotel, Richmond. November 14–15.
Florida Section—Suwanee Hotel, St. Petersburg, Fla. November 16–18.

Association of Military Surgeons of the United States. Hotel Pennsylvania, New York, N. Y. November 2–4.

Civil Service Assembly—Conference on Public Personnel Administration. Chicago, Ill. November 1–3.

Federation of Sewage Works Associations. William Penn Hotel, Pittsburgh, Pa. October 12–14.

Florida Public Health Association. Gainesville, Fla. December 4–6.

Institute of Medicine of Chicago—Postgraduate Assembly on Nervous and Mental Diseases and War. Palmer House, Chicago, Ill. November 1–2.

Michigan Public Health Association. Grand Rapids, Mich. November 1–3.

National Chemical Exposition—Sponsored by the Chicago Section of the American Chemical Society. The Coliseum, Chicago, Ill. November 15–19.

New England Industrial Nurses Association and Institute on Industrial Nursing—29th Annual Conference. Hotel Statler, Boston, Mass. October 13–15.

New York Institute of Clinical Oral Pathology. New York Academy of Medicine. Hosack Hall. October 30.

Pennsylvania Sewage Works Association—Seventeenth Annual Conference. William Penn Hotel, Pittsburgh, Pa. October 12–14.

U. S. Public Health Service—National Conference on Post-war Venereal Disease Control. St. Louis, Mo. November 9–11